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SHARP 19R-M100 SERVICE MANUAL

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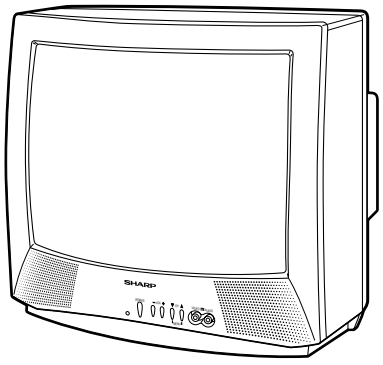
1st. Edition

SHARP SERVICE MANUAL



COLOR TELEVISION

Chassis No. SN-010

MODEL 19R-M100 (SREC)

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

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ELECTRICAL SPECIFICATIONS

POWER INPUT ..... AC 120 V, 60 Hz
POWER RATING ..... 69 W
PICTURE SIZE ..... 1,194cm^2 (185sq inch)
CONVERGENCE ..... Magnetic
SWEEP DEFLECTION ..... Magnetic
FOCUS ..... Hi-Bi-Potential Electrostatic
INTERMEDIATE FREQUENCIES
  Picture IF Carrier Frequency ..... 45.75 MHz
  Sound IF Carrier Frequency ..... 41.25 MHz
  Color Sub-Carrier Frequency ..... 42.17 MHz (Nominal)
AUDIO POWER
  OUTPUT RATING ..... 1 W (RMS)
SPEAKER
  SIZE ..... 8 cm (Round)
  VOICE COIL IMPEDANCE ..... 32 ohm at 400 Hz
ANTENNA INPUT IMPEDANCE
  VHF/UHF ..... 75 ohm Unbalanced
TUNING RANGES
  VHF-Channels ..... 2 thru 13
  UHF-Channels ..... 14 thru 69
  CATV Channels ..... 1 thru 125
  (EIA, Channel Plan U.S.A.)

Specifications are subject to change without prior notice.

SHARP CORPORATION

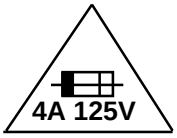
This document has been published to be used for after sales service only.
The contents are subject to change without notice.

IMPORTANT SERVICE SAFETY PRECAUTION

■ **Service work should be performed only by qualified service technicians who are thoroughly familiar with all safety checks and the servicing guidelines which follow:**

WARNING

1. For continued safety, no modification of any circuit should be attempted.
2. Disconnect AC power before servicing.
3. Semiconductor heat sinks are potential shock hazards when the chassis is operating.
4. The chassis in this receiver has two ground systems which are separated by insulating material. The non-isolated (hot) ground system is for the B+ voltage regulator circuit and the horizontal output circuit. The isolated ground system is for the low B+ DC voltages and the secondary circuit of the high voltage transformer.
   To prevent electrical shock use an isolation transformer between the line cord and power receptacle, when servicing this chassis.



CAUTION: FOR CONTINUED PROTECTION AGAINST A RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4A-125V FUSE.

SERVICING OF HIGH VOLTAGE SYSTEM AND PICTURE TUBE

When servicing the high voltage system, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the picture tube ground and the anode lead. (AC line cord should be disconnected from AC outlet.)

1. Picture tube in this receiver employs integral implosion protection.
2. Replace with tube of the same type number for continued safety.
3. Do not lift picture tube by the neck.
4. Handle the picture tube only when wearing shatterproof goggles and after discharging the high voltage anode completely.

X-RADIATION AND HIGH VOLTAGE LIMITS

1. Be sure all service personnel are aware of the procedures and instructions covering X-radiation. The only potential source of X-ray in current solid state TV receivers is the picture tube. However, the picture tube does not emit measurable X-Ray radiation, if the high voltage is as specified in the "High Voltage Check" instructions.
   It is only when high voltage is excessive that X-radiation is capable of penetrating the shell of the picture tube including the lead in the glass material. The important precaution is to keep the high voltage below the maximum level specified.
2. It is essential that servicemen have available at all times an accurate high voltage meter.
   The calibration of this meter should be checked periodically.
3. High voltage should always be kept at the rated value -no higher. Operation at higher voltages may cause a failure of the picture tube or high voltage circuitry and;also, under certain conditions, may produce radiation in exceeding of desirable levels.
4. When the high voltage regulator is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be tested while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly.
5. Do not use a picture tube other than that specified or make unrecommended circuit modifications to the high voltage circuitry.
6. When troubleshooting and taking test measurements on a receiver with excessive high voltage, avoid being unnecessarily close to the receiver.
   Do not operate the receiver longer than is necessary to locate the cause of excessive voltage.

IMPORTANT SERVICE SAFETY PRECAUTION

(Continued)

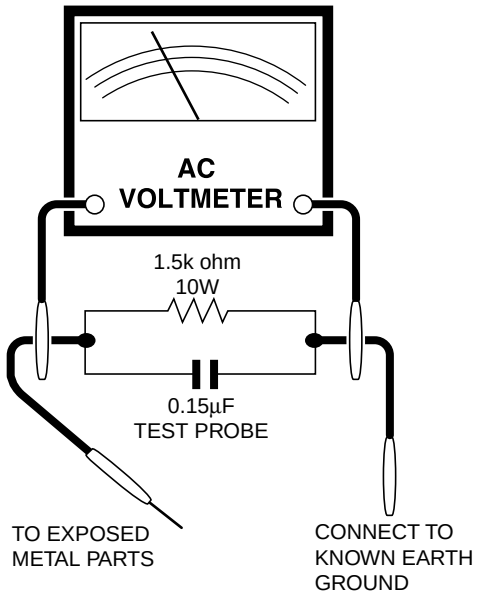
BEFORE RETURNING THE RECEIVER

(Fire & Shock Hazard)

Before returning the receiver to the user, perform the following safety checks.

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Inspect all protective devices such as non-metallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacity networks, mechanical insulators and etc.
3. To be sure that no shock hazard exists, check for leakage current in the following manner.

- Plug the AC cord directly into a 120 volt AC outlet, (Do not use an isolation transformer for this test).
- Using two clip leads, connect a 1.5k ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with all exposed metal cabinet parts and a known earth ground, such as electrical conduit or electrical ground connected to earth ground.
- Use an AC voltmeter having with 5000 ohm per volt, or higher, sensitivity to measure the AC voltage drop across the resistor.
- Connect the resistor connection to all exposed metal parts having a return to the chassis (antenna, metal cabinet, screw heads, knobs and control shafts, escutcheon and etc.) and measure the AC voltage drop across the resistor.
  AII checks must be repeated with the AC line cord plug connection reversed. (If necessary, a non-polarized adapter plug must be used only for the purpose of completing these check.)
  Any current measured must not exceed 0.5 milliamp. Any measurements not within the limits outlined above indicate of a potential shock hazard and corrective action must be taken before returning the instrument to the customer.



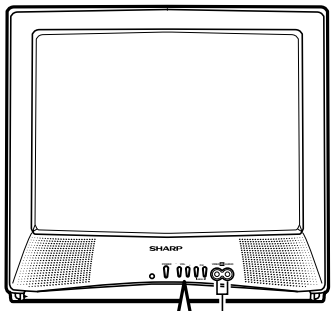
SAFETY NOTICE

Many electrical and mechanical parts in television receivers have special safety-related characteristics. These characteristics are often not evident from visual inspection, nor can protection afforded by them be necessarily increased by using replacement components rated for higher voltage, wattage and etc.
Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features are identified by "⚠" and shaded areas in the Replacement Parts Lists and Schematic Diagrams.

For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which do not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-radiation or other hazards.

LOCATION OF USER'S CONTROL

Front Panel



VIDEO IN AUDIO IN TERMINALS

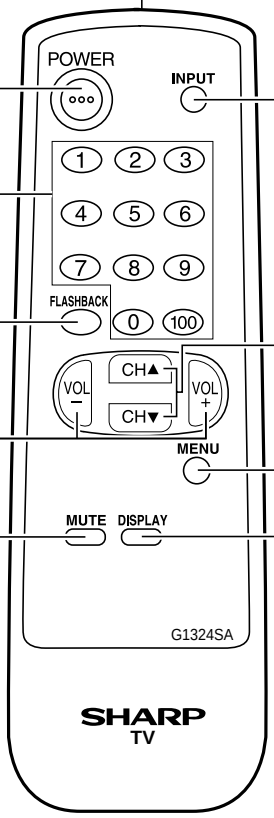
SENSOR AREA FOR REMOTE CONTROL

POWER
Press → On.
Press again → Off.

VOLUME UP/DOWN
(+) Increases sound.
(–) Decreases sound.

CHANNEL UP/DOWN
(▲) Selects next higher channel.
(▼) Selects next lower channel.
• Press both at the same time to access the MAIN MENU screen.

Basic Remote Control Functions



Infrared Transmitter Window

POWER
Press → On.
Press again → Off.

REMOTE KEYPAD
Accesses any channel from keypad.

FLASHBACK
Returns to previous channel.

VOLUME UP/DOWN
(+) Increases sound.
(–) Decreases sound.
• In menu mode, changes or selects the TV adjustments.

MUTE
Press → Mutes sound.
Press again → Restores sound.
• CLOSED CAPTION appears when sound is muted.

INPUT
Press → Switch to external video input mode.
Press again → Switch to TV mode.

CHANNEL UP/DOWN
(▲) Selects next higher channel.
(▼) Selects next lower channel.
• Moves the " ⬍" mark of the MENU screen.

MENU
Press → Accesses MAIN MENU.
Press again → Exits MAIN MENU.

DISPLAY
Press → Displays receiving channel for four seconds.
Press again → Removes display.
• Temporarily displays receiving channel when in Closed Caption mode.

INSTALLATION AND SERVICE INSTRUCTIONS

Note: (1) When performing any adjustments to resistor controls and transformers use non-metallic screwdrivers or TV alignment tools.
(2) Before performing adjustments, the TV set must be on at least 15 minutes.

CIRCUIT PROTECTION

The receiver is protected by a 4.0A fuse (F701), mounted on PWB-A, wired into one side of the AC line input.

X-RADIATION PROTECTOR CIRCUIT TEST

After service has been performed on the horizontal deflection system, high voltage system, B+ system, test the X-Radiation protection circuit to ascertain proper operation as follows:

1. Apply 120V AC using a variac transformer for accurate input voltage.
2. Allow for warm up and adjust all customer controls for normal picture and sound.
3. Receive a good local channel.
4. Connect a digital voltmeter to TP653 and make sure that the voltmeter reads 21.4 ±1.5 V.
5. Apply external 27.2V DC at TP653 by using an external DC supply, TV must be shut off.
6. To reset the protector, unplug the AC cord and make a short circuit between TP651 and TP652. Now make sure that normal picture appears on the screen.
7. If the operation of the horizontal oscillator does not stop in step 5, the circuit must be repaired before the set is returned to the customer.

HIGH VOLTAGE CHECK

High voltage is not adjustable but must be checked to verify that the receiver is operating within safe and efficient design limitations as specified checks should be as follows:

1. Connect an accurate high voltage meter between ground and anode of picture tube.
2. Operate receiver for at least 15 minutes at 120V AC line voltage, with a strong air signal or a properly tuned in test signal.
3. Enter the service mode and select the service adjustment "S03" and Bus data "01" (Y-mute on).
4. The voltage should be approximately 26.0kV (at zero beam).
   If a correct reading cannot be obtained, check circuitry for malfunctioning components. After the voltage test, make Y-mute off to the normal mode.

For adjustments of this model, the bus data is converted to various analog signals by the D/A converter circuit.

Note: There are still a few analog adjustments in this series such as focus and master screen voltage. Follow the steps below whenever the service adjusment is required.

To enter the service mode and exit service mode.

While pressing the Vol-up and Ch-up buttons at the sametime, plug the AC cord into a wall socket.
Now, the TV set is switched on and enters the service mode.
To exit the service mode, turn the television off by pressing the power button.

1. Service mode.

Before putting unit into the service mode, check that customer adjustments are in the normal mode. Use the reset function in the video adjustment menu to ensure customer control are in their proper (reset) position.

2. Service number selection.

In the service mode, you will see the window screen as window ①. There are 3 adjustment categories ②DEF, ③SIGNAL, ④FIX VALUE as show in **Figure A**.

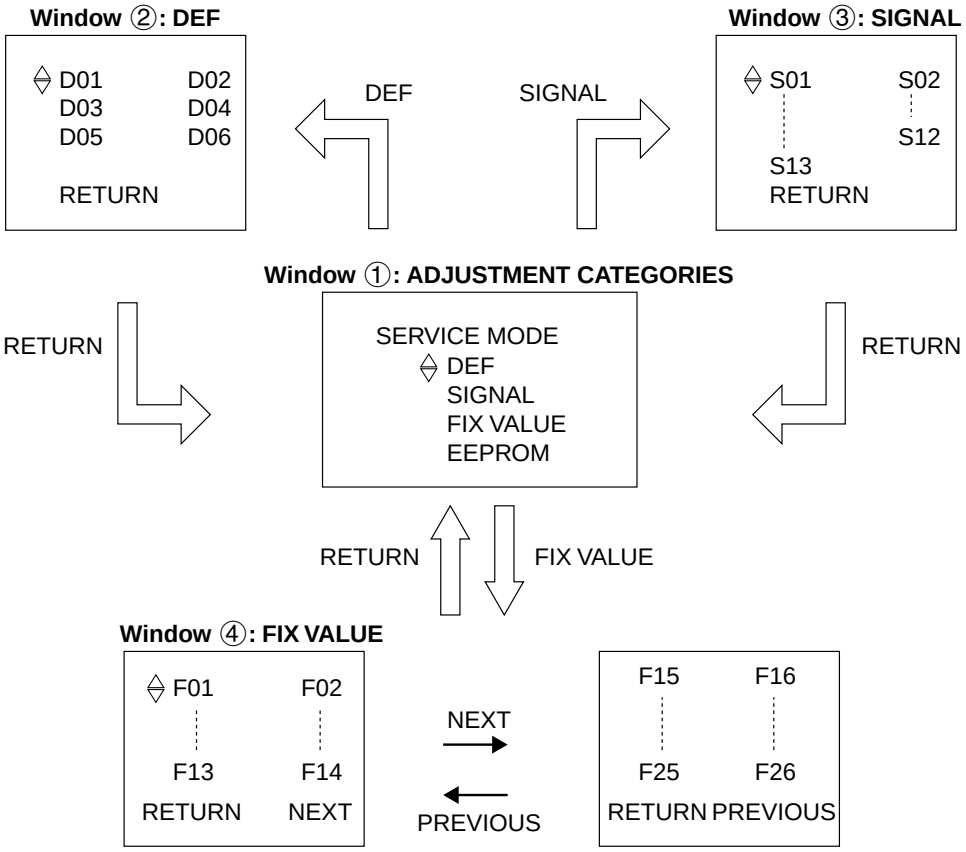


Figure A: ADJUSTMENT CATEGORIES

Press CH UP/DOWN button for selection and enter by VOL UP or VOL DOWN.
Press CH UP/DOWN button to select the adjustment item and VOL UP/DOWN to adjust the data number for each categories.
(OSD disturbance can be erased by R/C display key)
(Note: EEPROM – factory used only)

Below are the adjustments ranges and initial values for FIX VALUE category.

FIX VALUE

SERVICE POSITION	ADJUST ITEM	DATA		
		RANGE	INITIAL VALUE	(Hex)
F01	OPTION 1	00-FF	B0	B0
F02	OPTION 2	00-FF	04	04
F03	E-SAVE	00-3F	23	2A
F04	TUNER SETUP	00, 01	00	00
F05	R-TONE RD	00-7F	19	03
F06	R-TONE BD	00-7F	00	7C
F07	B-TONE RD	00-7F	00	00
F08	B-TONE BD	00-7F	12	04
F09	FM LEVEL	00-1F	0C	0C
F10	AFC GAIN	00, 01	00	00
F11	G DRIVE	00, 0F	0F	0F
F12	FBT BLK SW	00, 01	01	01
F13	V COMP	00-07	07	07
F14	OSD CONT	00-07	02	01
F15	SHARPNESS	00-3F	19	19
F16	FLT SYS	00-03	00	00
F17	KILLER OP	00-07	04	02
F18	PRE SHOOT	00-03	03	00
F19	CORING	00-07	07	04
F20	DC REST	00-03	02	02
F21	BS START	00-03	01	01
F22	BS GAIN	00-03	01	01
F23	ABL START	00-07	00	00
F24	R/B ANGLE	00-0F	08	08
F25	H BLK R	00-07	04	03
F26	H BLK L	00-07	04	00

Table - A

Below are the ranges and initial values for each adjustment and in each categories.

DEF

SERVICE POSITION	ADJUST ITEM	DATA		ADJUSTMENT CONTENTS
		RANGE	INITIAL VALUE	
D01	H-PHASE	00-1F	0C	
D02	V-SIZE	00-7F	40	
D03	V-POSITION	00-3F	20	Must be "20"
D04	CC-POSITION	00-FF	1A	
D05	V-LINEARITY	00-1F	10	Must be "18"
D06	V-S-CORRECTION	00-1F	10	Must be "0C"

Table - B

SIGNAL

SERVICE POSITION	ADJUST ITEM	DATA		ADJUSTMENT CONTENTS
		RANGE	INITIAL VALUE	
S01	RF AGC	00-3F	14	
S02	VIDEO LEVEL	00-07	03	
S03	Y-MUTE	00-03	00	"01":Y-MUTE, "02":V-STOP&Y-MUTE "03":Activate color killer
S04	SUB BIAS	00-FF	40	Must be "30"
S05	R-BIAS	00-FF	00	
S06	G-BIAS	00-FF	00	
S07	B-BIAS	00-FF	00	
S08	R-DRIVE	00-7F	40	
S09	B-DRIVE	00-7F	40	
S10	CONTRAST	00-7F	5A	
S11	TINT	00-7F	40	
S12	COLOR	00-7F	40	
S13	BRIGHTNESS	00-7F	40	

Note: Refer to the SERVICE ADJUSTMENT for each corresponding values.

Table - C

Holding down both the Vol-up/Ch-down buttons on the TV set at service mode for more than 2 seconds will automatically write the above initial values into IC2102 (IC2101).

PART REPLACED	ADJUSTMENT		NOTES
	NECESSARY	UNNECESSARY	
IC2001		X	Data is stored in IC2102 (IC2101).
IC201	X		The adjustment is needed to compensate for characteristics of parts including IC201.
IC2102 (IC2101)	X		Holding down both the Vol-up/Ch-down buttons on the TV set in the service mode for more than 2 seconds will automatically write the above initial values into IC2102 (IC2101).
CRT	X		Adjust items related to picture tube only.

Table - D

	R2101	R2102	R2103	R2104
If using IC2101	◯	◯	–	–
If using IC2102	–	–	◯	◯

Table - E

■ SERVICE ADJUSTMENT

RF AGC Adjustment

1. Receive a good local channel.
2. Enter the service mode signal category and select the service adjustment "S01".
3. Set the data value to point where no noise or beat appears.
4. Select another channel to confirm that no noise or beat appears.
   Note: You have to exit the service mode first to select another channel.

Video Level (TV Det Video Level) Adjustment

1. Receive a good local channel.
2. Enter the service mode signal category and select the service adjustment "S02".
3. Set the data value to "02" first, then adjust the data in ranges 02 ±2 step to obtain a normal contrast level.

Screen Adjustment

1. Connect to oscilloscope probe between TP855 and ground of the CRT unit.
2. Receive a good local channel.
3. Enter the service mode Signal category and set the service adjustment "S04" to step 30. Then select the service adjustment "S12" and set the data value to "00" to set the color level to the minimum level. (record the original data first). You may skip this step, if you selected a B/W picture or monoscope pattern. Set also the "S05/S06/S07" data to minimum level.
4. Select the service adjustment "S03" and set the data value to "01" to turn off the luminance signal (Y-mute).
5. Select the service adjustment "S13" and adjust the data value to obtain 2.35 volts as shown in **Figure B**.
6. Adjust the master screen control until the raster darkens to the point where raster is barely seen.
7. Adjust the service adjustment "S05" red, "S06" green and "S07" blue to obtain a good grey scale with normal white at low brightness level.
8. Select the service a adjustment "S03" and reset data to "00". Select the service adjustment "S12" and reset data to obtain normal color level.
9. Remove probe and reset the master screen control to obtain normal brightness range.

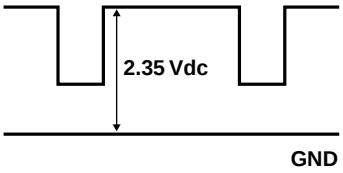


Figure B: WAVEFORM FOR SCREEN ADJUSTMENT

White Balance Adjustment

1. Receive a good local channel.
2. Select the service adjustment "S12" and set the data value to "00" to set the color level to the minimun. You may skip this step, if you selected a B/W picture or monoscope.
3. Alternately adjust the service adjustment data of "S08" and "S09" until a good grey scale with normal white is obtained.
4. Select the service adjustment "S12" and reset data to obtain normal color level.

Sub-Picture Adjustment

1. Receive a good local channel.
2. Make sure the customer picture control is set to maximum.
3. Enter the service mode and select the service adjustment "S10".
4. Adjust the data value to achieve normal contrast range.

Sub-Tint Adjustment

1. Receive a good local channel.
2. Set the customer tint control to the center of it's range.
3. Enter the service mode and select the service adjustment "S11".
4. Adjust "S11" data value to obtain normal fresh tones.

Sub-Color Adjustment

1. Receive a good local channel.
2. Make sure the customer color control is set to center position.
3. Enter the service mode and select the service adjustment "S12".
4. Adjust "S12" data value to obtain normal color level.

Sub-Brightness Adjustment

1. Receive a good local channel.
2. Make sure the customer brightness control is set to center position.
3. Enter the service mode and select the service adjustment "S13".
4. Adjust "S13" data value to obtain normal brightness level.

Vertical-Size, V-Linearity and V-S Correction Adjustments

1. Receive a good local channel.
2. Enter the service mode DEF category and select the adjustment "D02" for Vertical Size, "D05" for V-Linearity and "D06" for V-S Correction Adjustment.
3. Set in order "D05" for V-Linearity, "D06" for V-S Correction and set the data to get the best linearity.
4. Then adjust "D02" data until it become a proper vertical size.

Horizontal Position Adjustment

1. Receive a good local channel.
2. Enter the service mode DEF category and select the adjustment "D01".
3. Adjust "D01" data value to center the picture.

Vertical-Phase Adjustment

1. Receive a good local channel.
2. Enter the service mode DEF category and select the adjustment "D03".
3. Adjust "D03" bus data to get the most acceptable vertical position.
   Note: The step range is 20 (032) ±10 steps.

Caption Position Adjustment (Horizontal)

1. Receive a good local channel.
2. Enter the service mode DEF category and select the adjustment "D04".
3. A black text box will appear on the screen. (see **Figure C**. below)
4. Adjust "D04" data value to balance the text box position in the center (A=B).

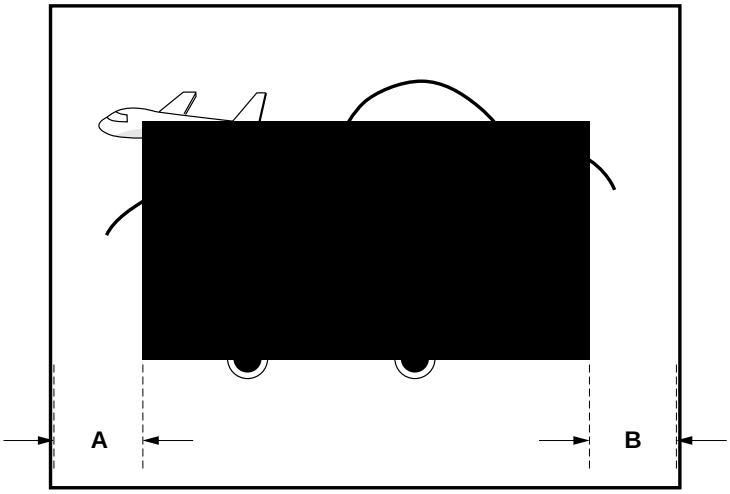
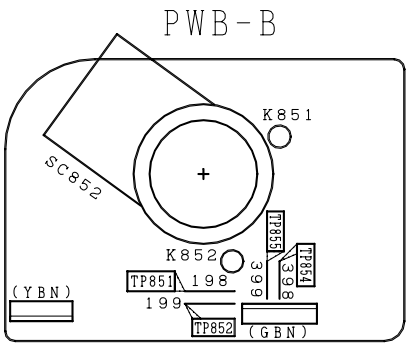


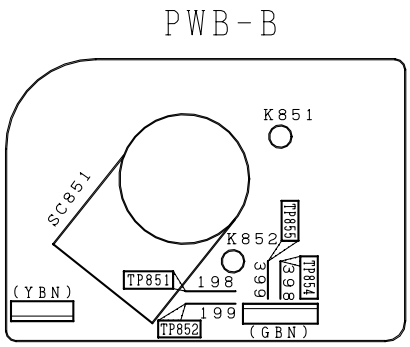
Figure C.

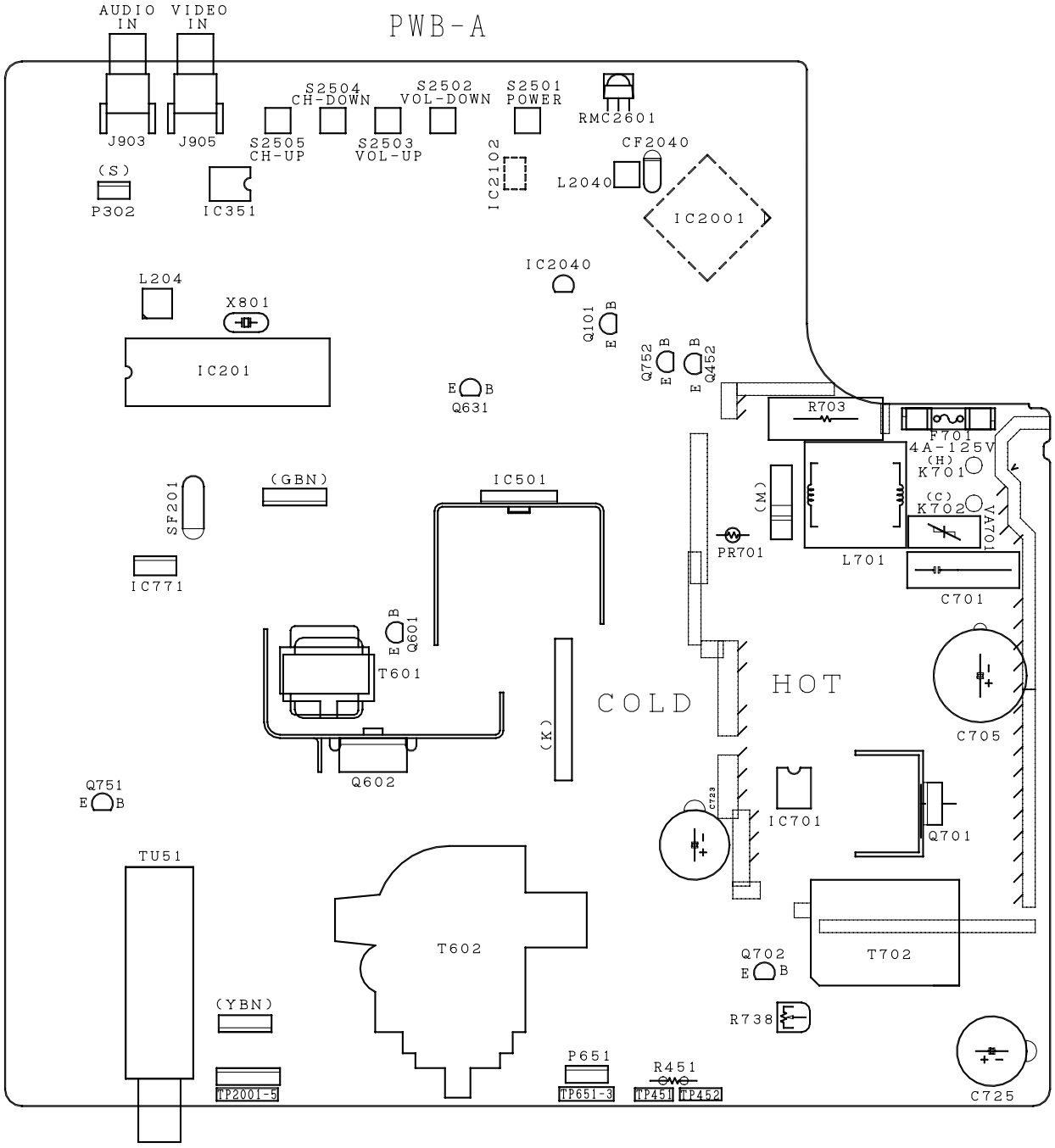
CHASSIS LAYOUT

■MINI NECK

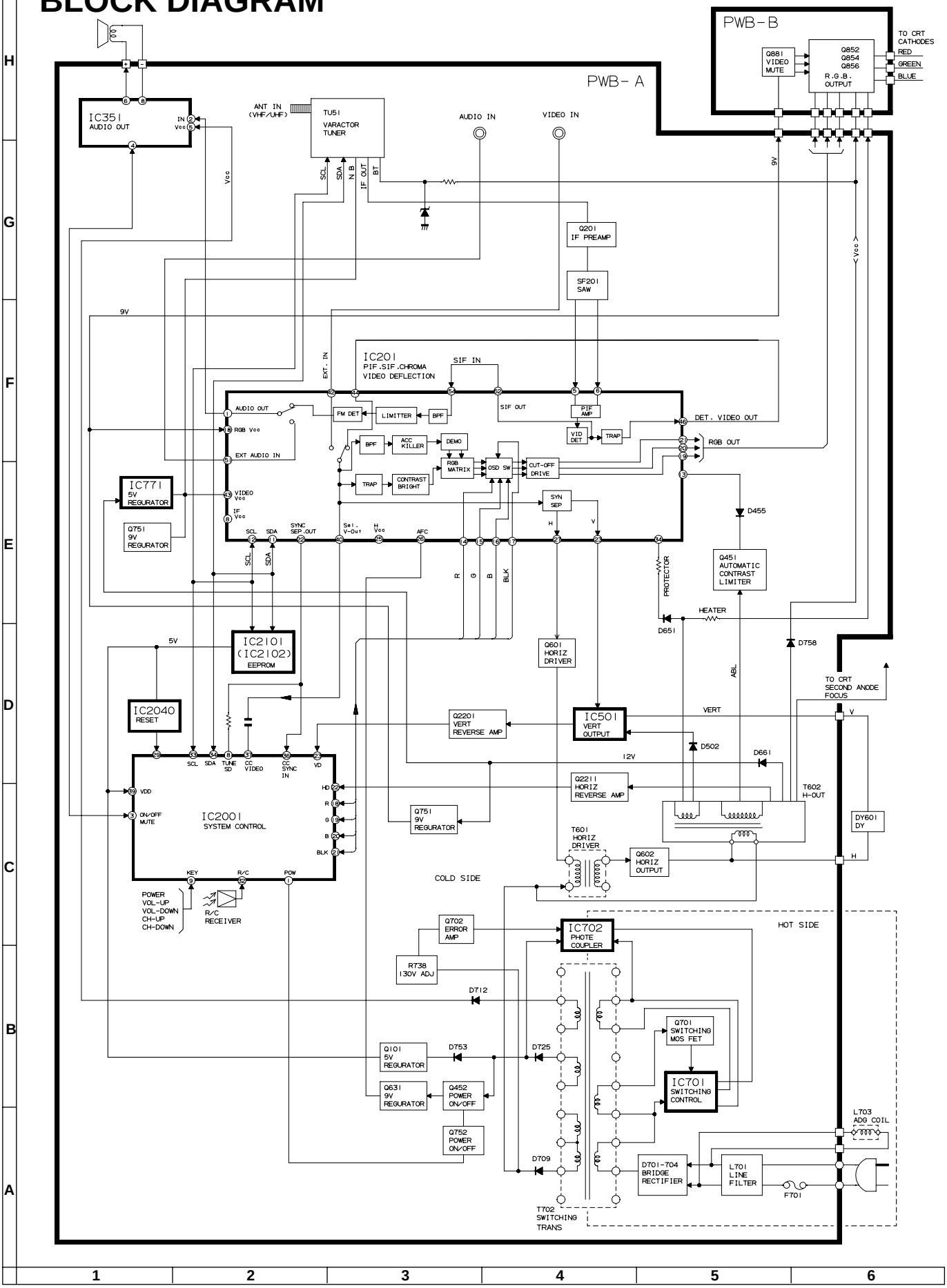


■NORMAL NECK





BLOCK DIAGRAM



DESCRIPTION OF SCHEMATIC DIAGRAM

NOTES:

1. *The unit of resistance "ohm" is omitted. (K=kΩ=1000Ω, M=MΩ)*
2. *All resistors are 1/10 watt, unless otherwise noted.*
3. *All capacitors are μF, unless otherwise noted. (P=pF=μμF)*
4. *(G) indicates ±2% tolerance may be used.*
5. *⏚ indicates line isolated ground.*

VOLTAGE MEASUREMENT CONDITIONS:

1. *All DC voltages are measured with DVM connected between points indicated and chassis ground, line voltage set at 120V AC and all controls set for normal picture unless otherwise indicated.*
2. *All voltages measured with 1000μ V B & W or Color signal.*

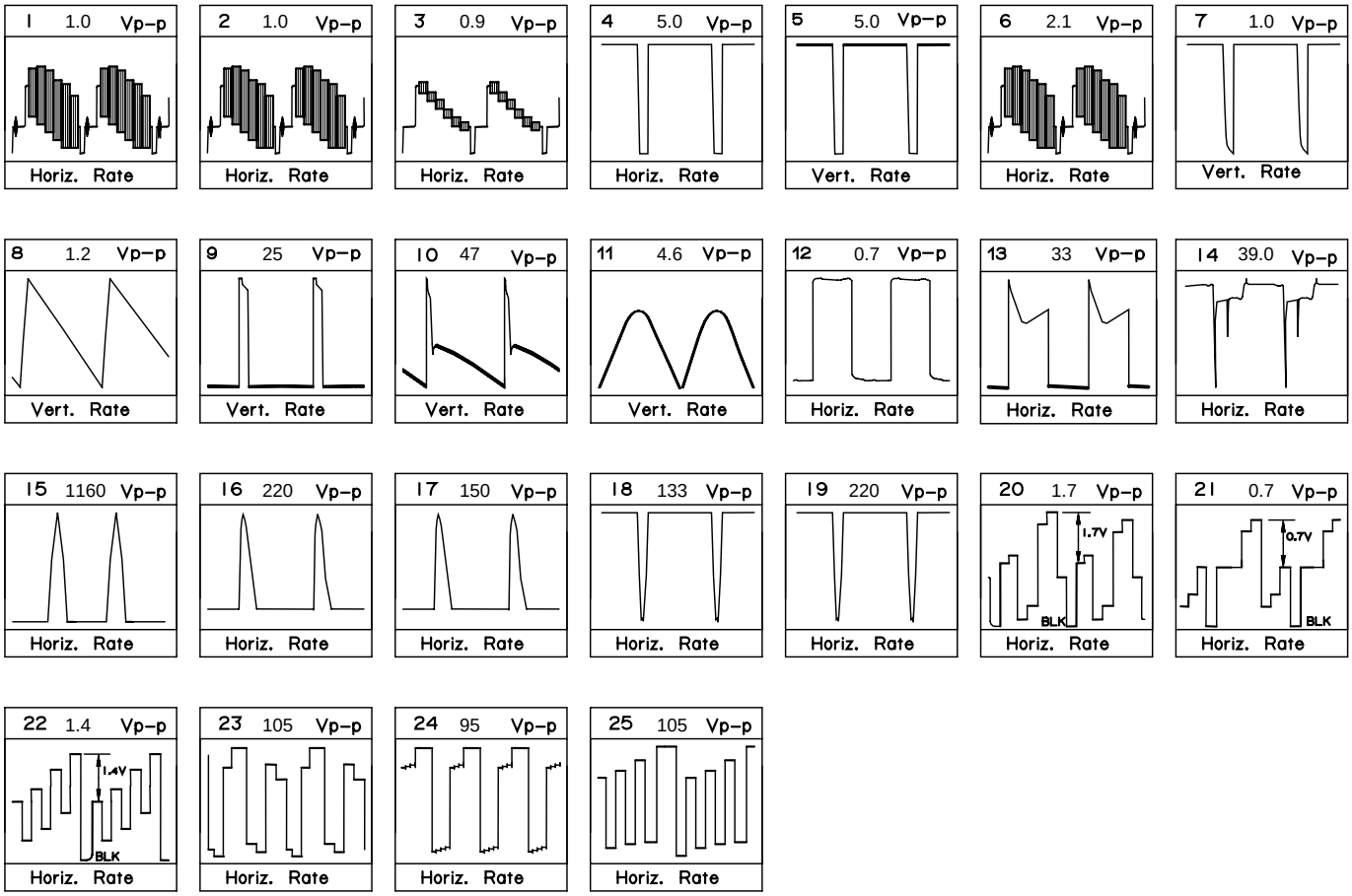
WAVEFORM MEASUREMENT CONDITIONS:

1. *Photographs taken on a standard gated color bar signal, the tint setting adjusted for proper color. The wave shapes at the red, green and blue cathodes of the picture tube depend on the tint, color level and picture control.*
2. *◯▶ indicates waveform check points (See chart, waveforms are measured from point indicated to chassis ground.)*

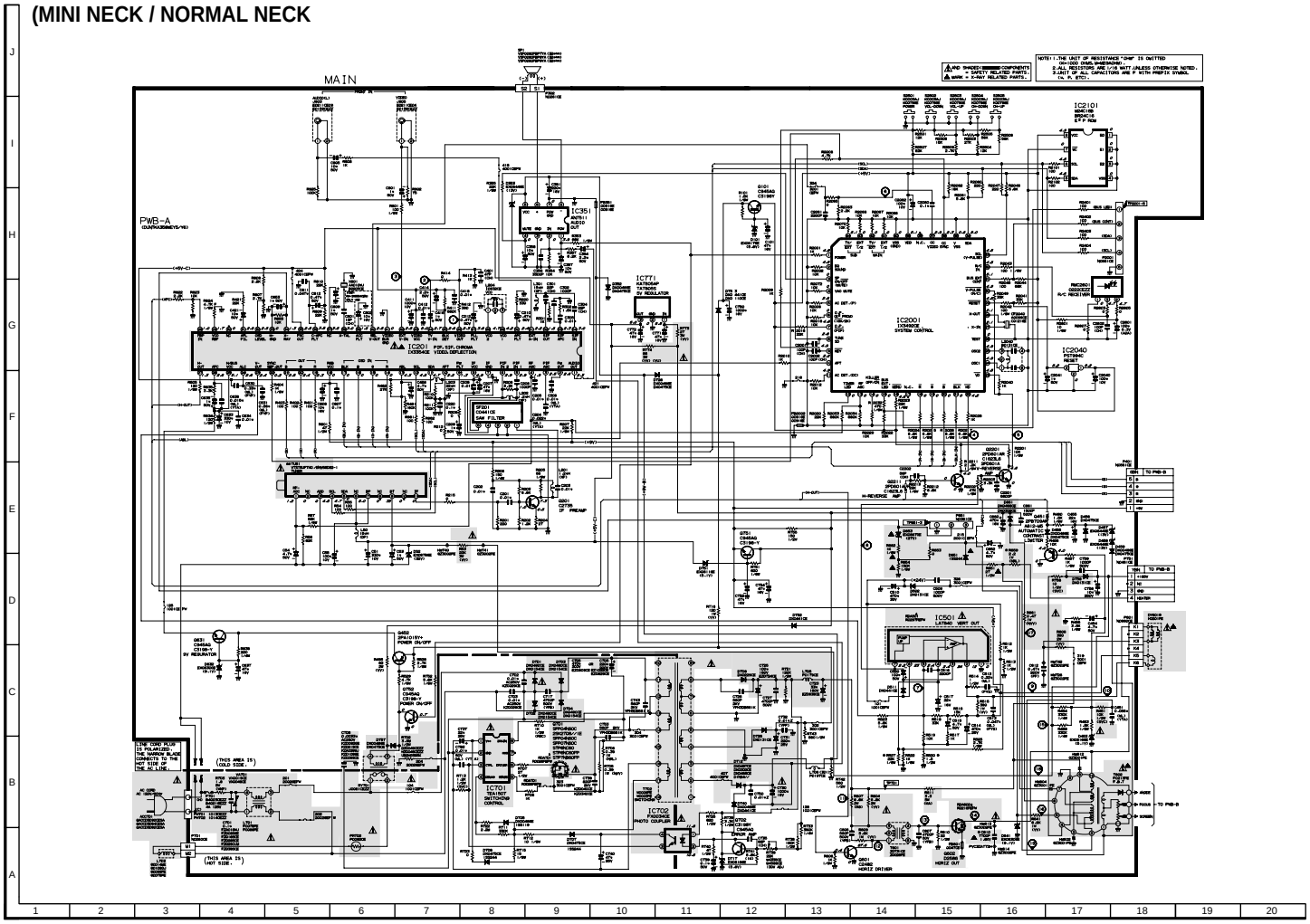
⚠ ***AND SHADED ( ) COMPONENTS = SAFETY RELATED PARTS.***
▲ ***MARK= X-RAY RELATED PARTS.***

This circuit diagram is a standard one, printed circuits may be subject to change for product improvement without prior notice.

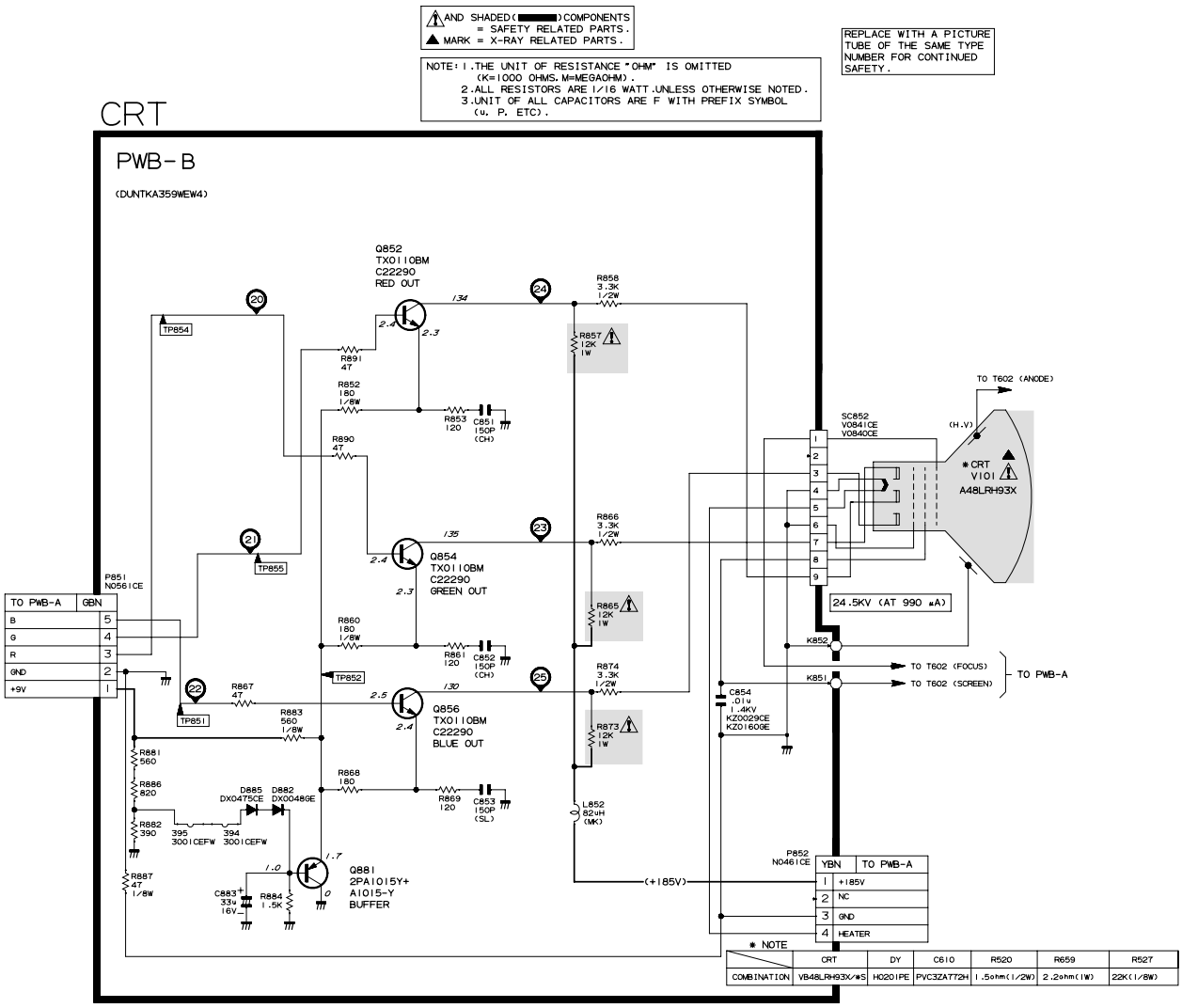
WAVEFORMS



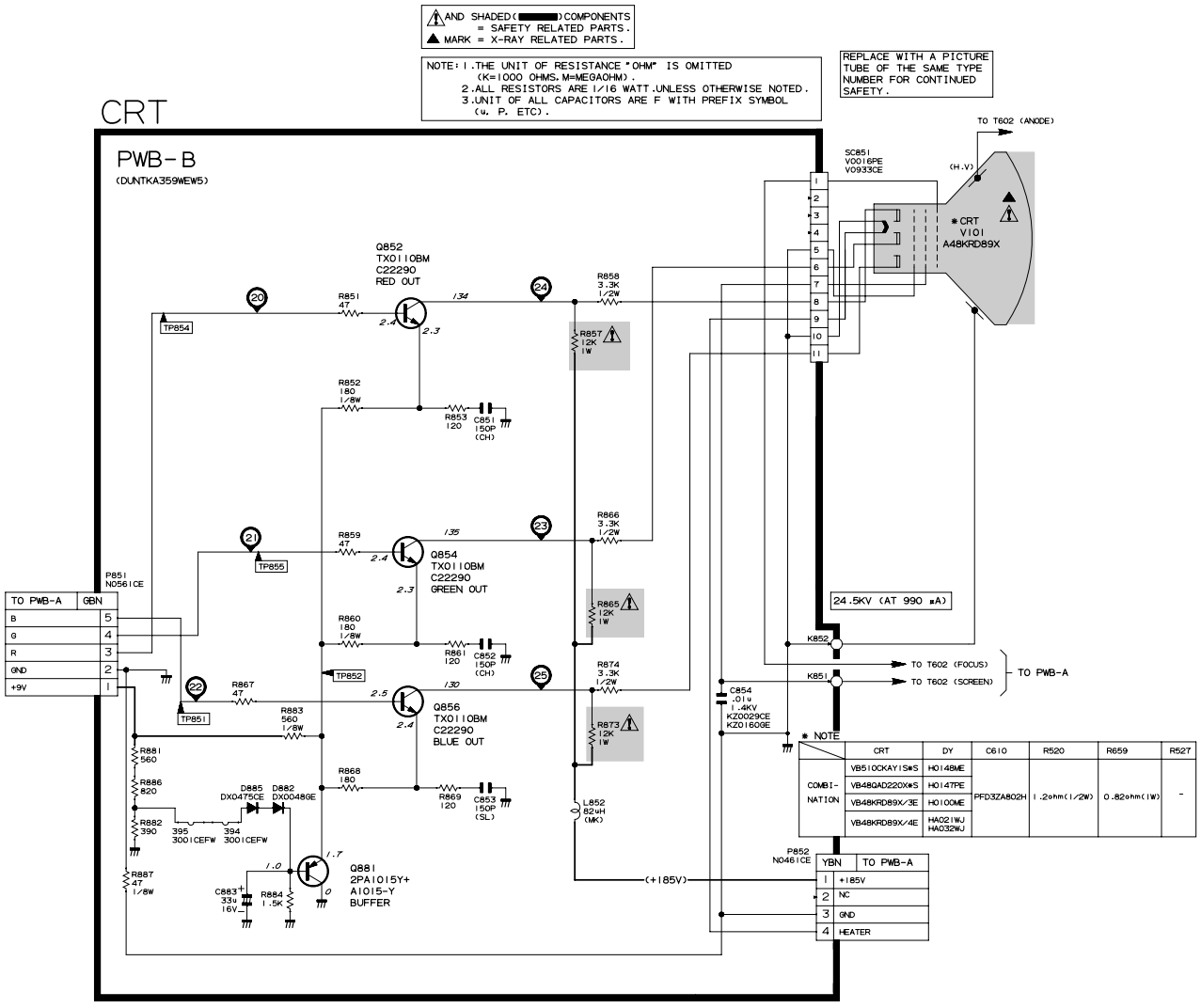
MODEL 19R-M100 SCHEMATIC DIAGRAM: MAIN Unit
(MINI NECK / NORMAL NECK



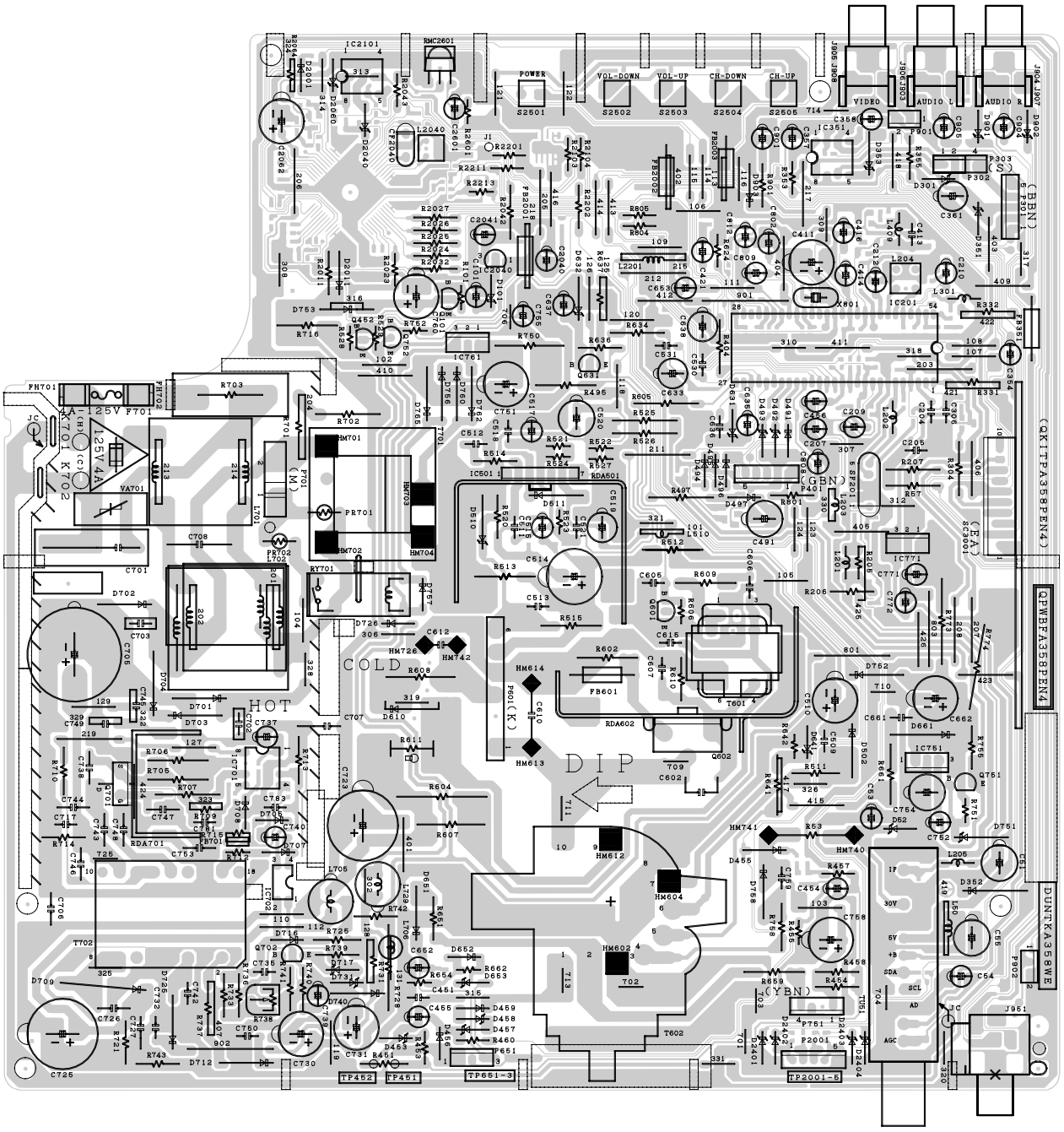
MODEL 19R-M100 SCHEMATIC DIAGRAM: CRT Unit (MINI NECK)


⚠ AND SHADED( ) COMPONENTS = SAFETY RELATED PARTS.
▲ MARK = X-RAY RELATED PARTS.
NOTE: 1.THE UNIT OF RESISTANCE "OHM" IS OMITTED (K=1000 OHMS, M=MEGAOHM).
2.ALL RESISTORS ARE 1/16 WATT.UNLESS OTHERWISE NOTED.
3.UNIT OF ALL CAPACITORS ARE F WITH PREFIX SYMBOL (u, P, ETC).
REPLACE WITH A PICTURE TUBE OF THE SAME TYPE NUMBER FOR CONTINUED SAFETY.
CRT
PWB-B
(DUNTKA359WEW4)
Q852 TX0110BM C22290 RED OUT
Q854 TX0110BM C22290 GREEN OUT
Q856 TX0110BM C22290 BLUE OUT
Q881 2PA1015Y+ A1015-Y BUFFER
TO PWB-A
TO T602 (ANODE)
TO T602 (FOCUS)
TO T602 (SCREEN)
24.5KV (AT 990 uA)
SC852 V0841CE V0840CE
*CRT V101 A48LRH93X
P851 N0561CE
P852 N0461CE
(+185V)
* NOTE
CRT | DY | C610 | R520 | R659 | R527
COMBINATION | VB48LRH93X/#S | H0201PE | PVC3ZAT72H | 1.5ohm(1/2W) | 2.2ohm(1W) | 22K(1/8W)

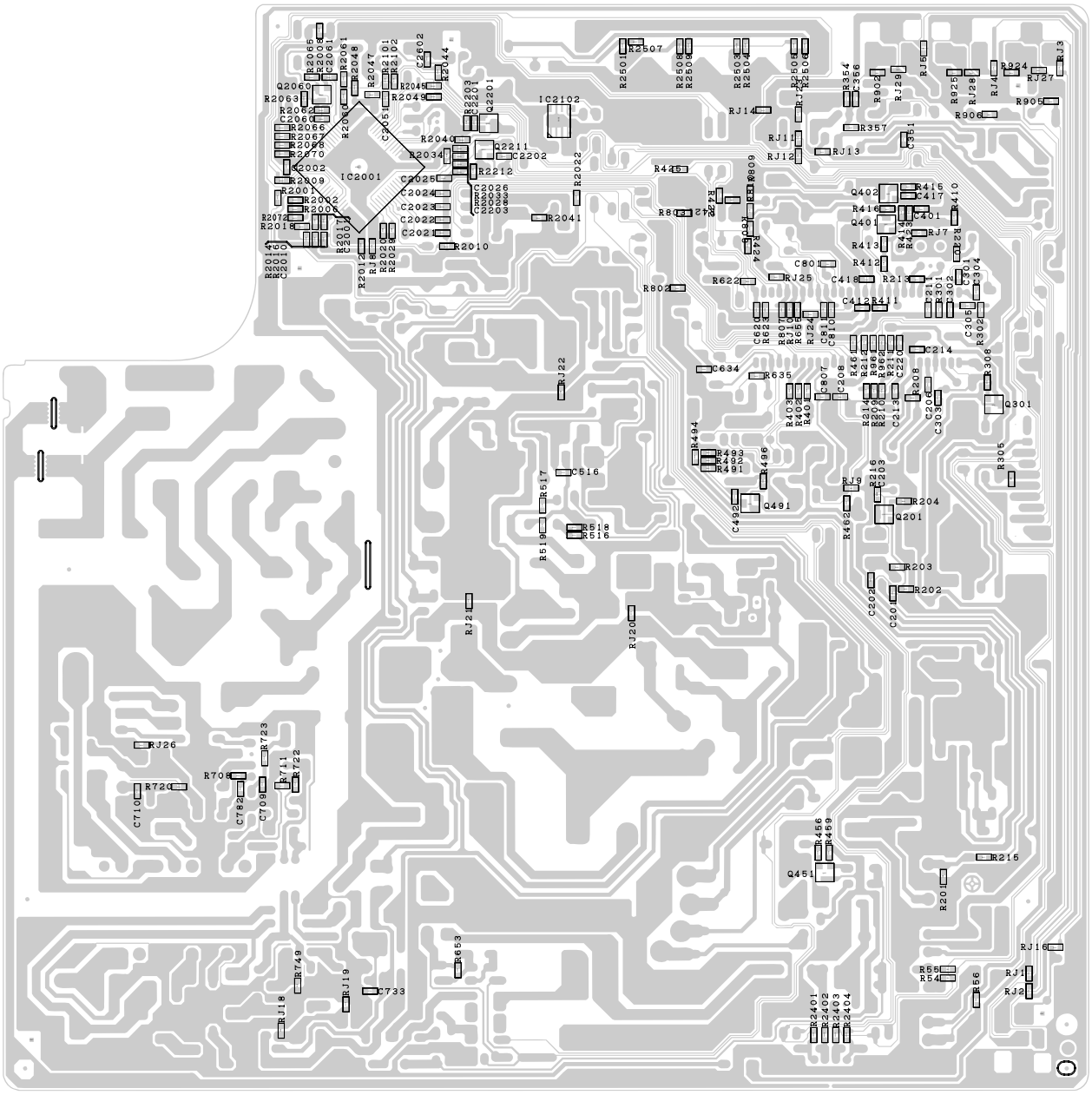
MODEL 19R-M100 SCHEMATIC DIAGRAM: CRT Unit (NORMAL NECK)



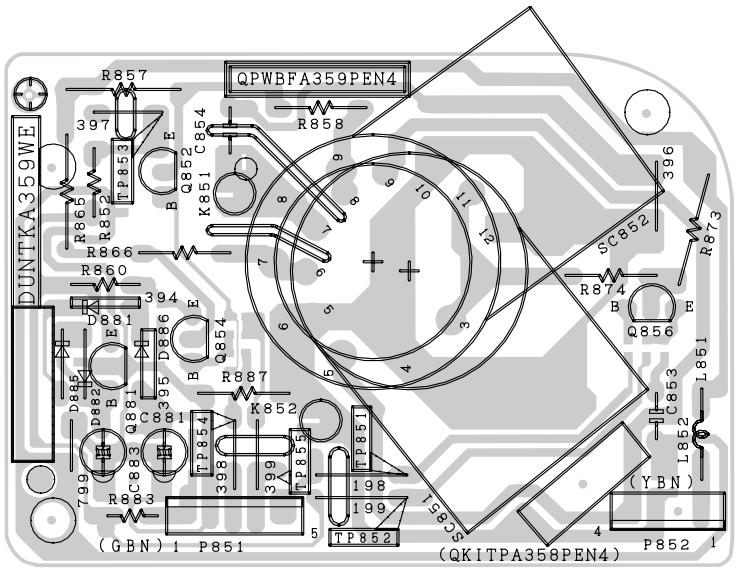
PRINTED WIRING BOARD ASSEMBLIES



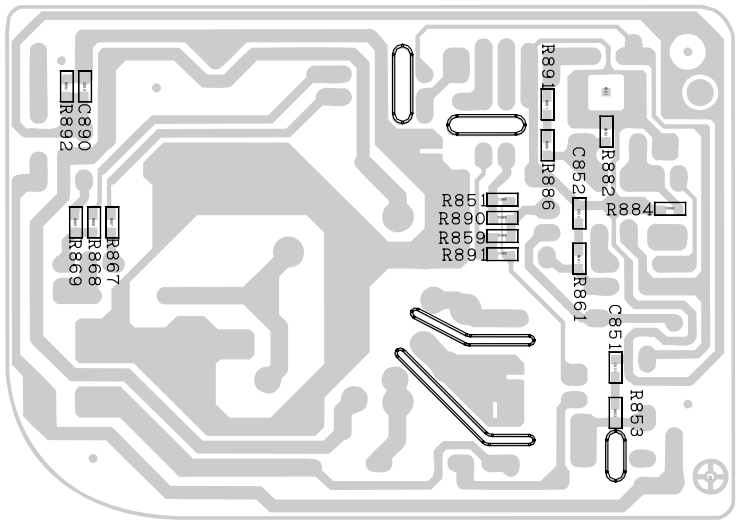
PWB-A: MAIN Unit (Wiring Side)



PWB-A: MAIN Unit (Chip Parts Side)



PWB-B: CRT Unit (Wiring Side)



PWB-B: CRT Unit (Chip Parts Side)

PARTS LIST

PARTS REPLACEMENT

Replacement parts which have these special safety characteristics identified in this manual; electrical components having such features are identified by ⚠ and shaded areas in the Replacement Parts Lists and Schematic Diagrams. The use of a substitute replacement part which dose no have the same safety characteristic as the factory recommended replacement parts shown in this service manual may create shock, fire or other hazards.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

in **USA**: Contact your nearest SHARP Parts Distributor to order. For location of SHARP Parts Distributor, Please call Toll-Free; 1-800-BE-SHARP

★ MARK : SPARE PARTS-DELIVERY SECTION

▲ MARK : X- RAY RELATED PARTS

Ref. No.	Part No.	★	Description	Code

PICTURE TUBE

(MINI NECK)

▲⚠ V101	VB48LRH93X/*S	J	Picture Tube	CC
▲⚠ DY601	RCiLH0201PEZZ	R	Deflection Yoke	AZ
⚠ L703	RCiLG0078PEZZ	R	Degaussing Coil	AM
	or			
	RCiLG0014MEZZ			
	or			
	RCiLG0108GJZZ			
	or			
	RCiLG0099PEZZ			
	LHLDW0003PEKZ	R	Wire Holder, x4	AB
	LHLDW1033PEZZ	R	Holder	AA
	PMAGF3045CEZZ	J	Purity Magnet	AG
	PSPAG0003PEZZ	R	Spacer, x3	AD
	QEARCA002WJZZ	X	Grounding Strap	

	CRT	DY	C610	R520	R659	R527
COMBINATION	VB48LRH93X/*S	H0201PE	PVC3ZA7T2H	1.5ohm(1/2W)	2.2ohm(1W)	22K(1/8W)

(NORMAL NECK)

▲⚠ V101	VB48KRD89X/4E	J	Picture Tube	CB
▲⚠ DY601	RCiLHA032WJZZ	X	Deflection Yoke	
⚠ L703	RCiLG0078PEZZ	R	Degaussing Coil	AM
	or			
	RCiLG0014MEZZ			
	or			
	RCiLG0108GJZZ			
	or			
	RCiLG0099PEZZ			
	LHLDW0003PEKZ	R	Wire Holder, x4	AB
	LHLDW1033PEZZ	R	Holder	AA
	PMAGF3046CEZZ	J	Purity Magnet	AF
	PSPAG0003PEZZ	R	Spacer, x3	AD
	QEARCA002WJZZ	X	Grounding Strap	

	CRT	DY	C610	R520	R659	R527
COMBI-NATION	VB51OCKAY1S*S	H0148ME	PFD3ZA802H	1.2ohm(1/2W)	0.82ohm(1W)	-
	VB48GAD220X*S	H0147PE				
	VB48KRD89X/3E	H0100ME				
	VB48KRD89X/4E	HA021WJ HA032WJ				

Ref. No.	Part No.	★	Description	Code

PRINTED WIRING BOARD ASSEMBLIES
(NOT REPLACEMENT ITEM)

(MINI NECK)

PWB-A	DUNTKA358WEY5	–	MAIN Unit	—
PWB-B	DUNTKA359WEW4	–	CRT Unit	—

(NORMAL NECK)

PWB-A	DUNTKA358WEY6	–	MAIN Unit	—
PWB-B	DUNTKA359WEW5	–	CRT Unit	—

PWB-A: DUNTKA358WEY5 (MINI NECK)
PWB-A: DUNTKA358WEY6 (NORMAL NECK)
MAIN UNIT

TUNER

NOTE: THE PARTS HERE SHOWN ARE SUPPLIED AS AN ASSEMBLY BUT NOT INDEPENDENTLY.

⚠ TU51	VTUVTST5UF740	X	Vhf Tuner	
	or			
	VTUENV56D82-1			

INTEGRATED CIRCUITS

▲⚠ IC201	RH-iX3354CEN1	J	LA76843N	AT
IC351	VHiAN7511//-1	J	AN7511	AK
⚠ IC501	VHiLA7840//-1	J	LA7840	AR
⚠ IC701	VHiTEA1507/-1	J	TEA1507P/N1	AL
⚠ IC702	RH-FX0034CEZZ	J	PC817	AE
IC771	VHiKA7805AP-1	J	KIA7805API	AE
	or			
	VHiTA7805S/-1			
IC2001	RH-iX3492CEZZQ	J	TMPA8700CPF	AU
IC2040	VHiPST994C/-1+	X	PST994C-T	
IC2101	VHiM24C16B/-1	J	M24C16-BN6	AG
	or			
	VHiBR24C16-1			

TRANSISTORS

Q101	VS2SC945AQ/-1+	J	2SC945AQ	AB
	or			
	VS2SC3198Y/-1			
Q201	VS2SC2735//1EY	J	2SC2735	AC
Q451	VS2PB709AR/-1Y	J	2PB709AR	AB
	or			
	VS2SA812-M51E			
Q452	VS2PA1015Y+-1+	J	2PA1015Y	AC
Q601	VS2SC2482//-1+	J	2SC2482	AD
⚠ Q602	VS2SD2586//1E	J	2SD2586	AM
Q631	VS2SC945AQ/-1+	J	2SC945AQ	AB
	or			
	VS2SC3198-Y-1			
⚠ Q701	VSSPP04N60C-1	J	SPP04N60C	AH
	or			
	VS2SK2708//1E			
	or			
	VSSPP07N60C-1			
	or			
	VSSTP6NC60+-1			
	or			
	VSSTP6NC60FP			
	or			
	VSSTP7NB60FP			
Q702	VS2SC945AQ/-1+	J	2SC945AQ	AB
	or			
	VS2SC3198Y/-1			
Q751	VS2SC945AQ/-1+	J	2SC945AQ	AB
	or			
	VS2SC3198-Y-1			
Q752	VS2SC945AQ/-1+	J	2SC945AQ	AB
	or			
	VS2SC3198-Y-1			

Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTKA358WEY5 (MINI NECK) **PWB-A: DUNTKA358WEY6 (NORMAL NECK)** **MAIN UNIT (Continued)**				
Q2201	VS2PD601AR/-1Y or VS2SC1623L61E	J	2PD601AR	AB
Q2211	VS2PD601AR/-1Y or VS2SC1623L61E	J	2PD601AR	AB
DIODES				
D52	RH-EX0676GEZZY	J	Zener Diode, 32V	AA
D101	RH-EX0617GEZZY	J	Zener Diode, 5.6V	AA
D352	RH-DX0048GEZZY or RH-DX0475CEZZ	X	Diode	
D353	RH-EX0644GEZZY	J	Zener Diode, 13V	AB
D453	RH-EX0616GEZZY	J	Zener Diode, 5.1V	AA
D455	RH-DX0048GEZZY or RH-DX0475CEZZ	X	Diode	
D456	RH-DX0475CEZZY	X	Diode	
D457	RH-EX0644GEZZY	J	Zener Diode, 13V	AB
D458	RH-EX0644GEZZY	J	Zener Diode, 13V	AB
D459	RH-DX0048GEZZY or RH-DX0475CEZZ	X	Diode	
D502	RH-DX0131CEZZY	J	Diode	AC
D511	RH-DX0441CEZZY	J	Diode	AC
D632	RH-EX0630GEZZY	J	Zener Diode, 9.1V	AA
D641	RH-EX0630GEZZY	J	Zener Diode, 9.1V	AA
▲⚠ D651	VHD1SS244//-1Y	J	Diode	AB
▲⚠ D653	RH-EX0667GEZZY	J	Zener Diode, 27V	AA
⚠ D661	RH-DX0468CEZZ or RH-DX0302CEZZ	J	Diode	AE
⚠ D701	RH-DX0490CEZZY or RH-DX0154CEZZ	J	Diode	AC
⚠ D702	RH-DX0490CEZZY or RH-DX0154CEZZ	J	Diode	AC
⚠ D703	RH-DX0490CEZZY or RH-DX0154CEZZ	J	Diode	AC
⚠ D704	RH-DX0490CEZZY or RH-DX0154CEZZ	J	Diode	AC
D705	RH-DX0048GEZZY or VHD1SS244//-1	X	Diode	
D707	RH-DX0475CEZZY or VHD1SS244//-1	X	Diode	
D708	RH-DX0475CEZZY or VHD1SS244//-1	X	Diode	
⚠ D709	RH-DX0229CEZZ	J	Diode	AF
⚠ D712	RH-DX0487CEZZY or RH-DX0302CEZZ or RH-DX0468CEZZ or VHDD1NS4///-1	J	Diode	AC
D717	RH-EX0616GEZZY	J	Zener Diode, 5.6V	AA
⚠ D725	RH-DX0131CEZZY	J	Diode	AC
D726	RH-DX0048GEZZY or RH-DX0475CEZZ	X	Diode	
D740	RH-DX0048GEZZY or RH-DX0441CEZZ	X	Diode	
D751	RH-EX0611GEZZY	J	Zener Diode, 5.1V	AA
D752	RH-DX0441CEZZY	J	Diode	AC
D753	RH-DX0441CEZZY or RH-DX0110CEZZ	J	Diode	AC
⚠ D757	RH-DX0048GEZZY or RH-DX0475CEZZ	X	Diode	
⚠ D758	RH-DX0131CEZZY	J	Diode	AC
⚠ VA701	RH-VX0019CEZZ or RH-VX0048CEZZ	J	Varistor	AC
PACKAGED CIRCUIT				
⚠ PR702	RMPTP0092CEZZ	J	Packaged Circuit	AH
X801	RCRSAA010WJZZ or RCRSB0205CEZZ	X	Crystal	
FILTER AND COILS				
CF2040	RFiLA0099CEZZ+ or RFiLC0121GEZZ	X	Ceramic Filter	
L50	VP-DF150K0000Y	X	Peaking 15µH	
L201	VP-XF1R2K0000Y	J	Peaking 1.2µH	AB
L202	VP-XF1R2K0000Y	J	Peaking 1.2µH	AB
L203	VP-XF220K0000Y	J	Peaking 22µH	AB
L204	RCiLi0632CEZZ	J	If Coil	AE
L301	VP-XF150K0000Y	X	Peaking 15µH	
⚠ L701	RCiLF0078PEZZ or RCiLF0069PEZZ	J	Coil	AF
⚠ L705	RCiLP0179CEZZ+	J	Coil	AD
L706	RCiLP0197CEZZ	J	Coil	AE
L2040	RCiLB0131CEZZ	J	Oscillation Coil	AE
SF201	RFiLC0441CEZZ	J	SAW Filter	AH
TRANSFORMERS				
⚠ T601	RTRNZ0731CEZZ or RTRNZ0026PEZZ	J	Transformer	AG
▲⚠ T602	RTRNF0213PEZZ	R	H-Volt Transformer	AY
⚠ T702	RTRNW0009PEZZ or RTRNW0003PEZZ	R	Transformer	AL
CONTROL				
R738	RVR-M4588CEZZ+ or RVR-M4336CEZZ	J	22k 130V Adj.	AC

CAPACITORS

[EL.··· Electrolytic, M-Poly.···· Metalized Polypro Film]

C51	VCEA0A1AW337M+	J	330	10V	EL.	AC
C53	VCEA0A1HW105M+	J	1.0	50V	EL.	AB
C54	VCEA0A1HW475M+	J	4.7	50V	EL.	AB
C55	VCEA0A1AW107M+	J	100	10V	EL.	AB
C101	VCEA0A1CW476M+	J	47	16V	EL.	AB
C201	VCKYCY1HF103ZY	J	0.01	50V	Ceramic	AA
C202	VCKYCY1HF103ZY	J	0.01	50V	Ceramic	AA
C203	VCKYCY1HF103ZY	J	0.01	50V	Ceramic	AA
C204	VCQYTA1HM223K+	J	0.022	50V	Mylar	AB
C205	VCKYPA1HB103K+	J	0.01	50V	Ceramic	AA
C206	VCKYCY1HB102KY	J	1000p	50V	Ceramic	AA
C207	VCEA0A1CW476M+	J	47	16V	EL.	AB
C208	VCKYCY1HF103ZY	J	0.01	50V	Ceramic	AA
C209	VCEA0A1HW105M+	J	1.0	50V	EL.	AB
C210	VCEA0A1HW474M+	J	0.47	50V	EL.	AB
C212	VCEA0A1HW474M+	J	0.47	50V	EL.	AB
C220	VCKYCY1CB104KY	J	0.1	16V	Ceramic	AB
C301	VCCCCY1HH220JY	J	22p	50V	Ceramic	AA
C302	VCKYCY1HB102KY	J	1000p	50V	Ceramic	AA
C304	VCCCCY1HH220JY	J	22p	50V	Ceramic	AA
C305	VCKYCY1HB103KY	J	0.01	50V	Ceramic	AA
C306	VCQYTA1HM103K+	J	0.01	50V	Mylar	AB

PWB-A: DUNTKA358WEY5 (MINI NECK)
PWB-A: DUNTKA358WEY6 (NORMAL NECK)
MAIN UNIT (Continued)

Ref. No.	Part No.	★	Description			Code
C354	VCEA0A1HW225M+	J	2.2	50V	EL.	AB
C356	VCKYCY1HB332KY	J	3300p	50V	Ceramic	AA
C357	VCEA0A1HW106M+	J	10	50V	EL.	AB
C358	VCEA0A1HW106M+	J	10	50V	EL.	AB
C361	VCEA0A1CW227M+	J	220	16V	EL.	AC
C401	VCCCCY1HH470JY	J	47p	50V	Ceramic	AA
C411	VCEA0A1AW108M+	J	1000	10V	EL.	AC
C412	VCKYCY1HB103KY	J	0.01	50V	Ceramic	AA
C414	VCEA0A1HW225M+	J	2.2	50V	EL.	AB
C416	VCEA0A1HW105M+	J	1.0	50V	EL.	AB
C418	VCKYCY1HB103KY	J	0.01	50V	Ceramic	AA
C421	VCEA0A1HW106M+	J	10	50V	EL.	AB
C451	VCQYTA1HM563K+	J	0.056	50V	Mylar	AB
C454	VCEA0A1HW475M+	J	4.7	50V	EL.	AB
C455	VCEA0A1CW226M+	J	22	16V	EL.	AB
C456	VCEA0A1HW475M+	J	4.7	50V	EL.	AB
C509	VCKYPA2HB102K+	J	1000p	500V	Ceramic	AA
C510	VCEA0A1VW477M	J	470	35V	EL.	AB
C512	VCFYSA1JB224J+	J	0.22	63V	Mylar	AD
C513	VCFYSA1JB473J+	J	0.047	63V	Mylar	AC
C514	VCEA0A1EW477M	J	470	25V	EL.	AD
C515	VCEA0A1HW475M+	J	4.7	50V	EL.	AB
C516	VCKYCY1HB222KY	J	2200p	50V	Ceramic	AA
C517	VCEA0A1CW226M+	J	22	16V	EL.	AB
C520	VCEA0A1HW107M+	J	100	50V	EL.	AB
C530	VCFYFA1HA334J+	J	0.33	50V	Mylar	AB
C531	VCFYFA1HA564J+	J	0.56	50V	Mylar	AB
C606	VCKYPA2HB561K+	J	560p	500V	Ceramic	AA
C607	VCKYPA1HB472K+	X	4700p	50V	Ceramic	
▲⚠ C610	VCFPVC3ZA772H	J	7700p (MINI NECK)	1.8kV	M-Poly.	AD
C610	VCFPFD3ZA802H	X	8000p (NORMAL NECK)	1.8kV	M-Poly.	
C612	VCFPVC2DB474J	J	0.47	200V	M-Poly.	AE
C633	VCEA0A1AW337M+	J	330	10V	EL.	AC
C634	VCKYCY1HF103ZY	J	0.01	50V	Ceramic	AA
C635	VCEA0A1HW105M+	J	1.0	50V	EL.	AB
C636	VCQYTA1HM153K+	J	0.015	50V	Mylar	AA
C637	VCEA0A1CW476M+	J	47	16V	EL.	AB
C652	VCEA0A1HW475M+	J	4.7	50V	EL.	AB
C653	VCEA0A1HW105M+	J	1.0	50V	EL.	AB
C661	VCKYPA2HB152K+	J	1500p	500V	Ceramic	AA
C662	VCEA0A1CW477M+	J	470	16V	EL.	AC
⚠ C701	RC-FZA018WJZZ or RC-FZ008SGEZZ or RC-FZ016SCEZZ or RC-FZ028SCEZZ or RC-FZ029CUMZZ or RC-FZ036SCEZZ	X	0.1			
C702	RC-KZ0029CEZZ+	X	0.01	AC250V	Ceramic	
C703	RC-KZ0029CEZZ	J	0.01	AC250V	Ceramic	AC
C705	RC-EZA070WJZZ	X				
⚠ C706	RC-KZ0092GEZZ or RC-KZ021SCEZZ or RC-KZA039WJZZ or RC-KZ0106GEZZ or RC-KZ009SCEZZ	J	0.0033	AC250V	Ceramic	AC
C717	VCKYPA2HB472K+	J	4700p	500V	Ceramic	AB
⚠ C723	RC-EZA069WJZZ	X	33	160V	EL.	
⚠ C725	RC-EZ0776CEZZ	X	100	160V	EL.	
C726	VCKYPH3DB561K	J	560p	2kV	Ceramic	AC
C727	VCKYPA2HB472K+	J	4700p	500V	Ceramic	AB
⚠ C730	VCEA0A1CW108M	J	1000	16V	EL.	AD
⚠ C731	VCEA0A1EW227M+	J	220	25V	EL.	AB
C732	VCKYPA1HF103Z+	J	0.01	50V	Ceramic	AA
C735	VCCCPA1HH680J+	X	68p	50V	Ceramic	
C737	VCEA0A1EW226M+	J	22	25V	EL.	AB
C738	RC-KZ0040CEZZ or RC-KZ0340CEZZ	J	820p	2kV	Ceramic	AD
C739	VCEA0A1HW104M+	J	0.1	50V	EL.	AB
C740	VCEA0A1EW476M+	J	47	25V	EL.	AB
C743	VCKYPH3DB561K	J	560p	2kV	Ceramic	AC
C750	VCKYPA1HF103Z+	J	0.01	50V	Ceramic	AA
C752	VCEA0A1CW476M+	J	47	16V	EL.	AB
C753	VCKYPH3DB561K	J	560p	2kV	Ceramic	AC
C754	VCEA0A1CW476M+	J	47	16V	EL.	AB
C758	VCEA0A2EW106M	J	10	250V	EL.	AD
C759	VCKYPA2HB102K+	J	1000p	500V	Ceramic	AA
C760	VCEA0A1CW108M	J	1000	16V	EL.	AD
C771	VCEA0A1CW476M+	J	47	16V	EL.	AB
C772	VCEA0A1CW476M+	J	47	16V	EL.	AB
C783	VCQYTA1HM103K+	J	0.01	50V	Mylar	AB
C801	VCCCCY1HH180JY	J	18p	50V	Ceramic	AA
C802	VCEA0A1CW106M+	J	10	16V	EL.	AB
C807	VCKYCY1EF104ZY	J	0.1	25V	Ceramic	AA
C808	VCEA0A1CW106M+	J	10	16V	EL.	AB
C809	VCEA0A1HW105M+	J	1.0	50V	EL.	AB
C811	VCKYCY1CB473KY	J	0.047	16V	Ceramic	AA
C812	VCEA0A1HW474M+	J	0.47	50V	EL.	AB
C901	VCEA0A1HW105M+	J	1.0	50V	EL.	AB
C905	VCEA0A1HW106M+	J	10	50V	EL.	AB
C2001	VCCCCY1HH101JY	J	100p	50V	Ceramic	AA
C2002	VCCCCY1HH101JY	J	100p	50V	Ceramic	AA
C2040	VCEA0A1AW107M+	J	100	10V	EL.	AB
C2041	VCEA0A1HW105M+	J	1.0	50V	EL.	AB
C2060	VCKYCY1CB104KY	J	0.1	16V	Ceramic	AB
C2061	VCKYCY1HB222KY	J	2200p	50V	Ceramic	AA
C2062	VCEA0A1AW107M+	J	100	10V	EL.	AB
C2201	VCKYCY1HB682KY	J	6800p	50V	Ceramic	AA
C2202	VCCCCY1HH560JY	J	56p	50V	Ceramic	AB
C2601	VCEA0A0JW107M+	J	100	6.3V	EL.	AB
C2602	VCCCCY1HH101JY	J	100p	50V	Ceramic	AA

RESISTORS

[M-Ox.…Metal Oxide, M-Film …Metal Film]

RJ2	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ7	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ8	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ9	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ10	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ12	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ16	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ18	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ19	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ20	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
RJ21	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
⚠ R53	VRS-VV3LB223J	J	22k	3.0W	M-Ox.	AB
R54	VRS-CY1JF101JY	J	100	1/16W	M-Ox.	AA
R55	VRS-CY1JF101JY	J	100	1/16W	M-Ox.	AA
R56	VRS-CY1JF823JY	J	82k	1/16W	M-Ox.	AA
R57	VRD-RA2BE563JY	J	56k	1/8W	Carbon	AA
R101	VRD-RA2BE152JY	J	1.5k	1/8W	Carbon	AA
R201	VRS-CY1JF221JY	J	220	1/16W	M-Ox.	AA
R202	VRS-CY1JF122JY	J	1.2k	1/16W	M-Ox.	AA
R203	VRS-CY1JF682JY	J	6.8k	1/16W	M-Ox.	AA
R204	VRS-CY1JF270JY	J	27	1/16W	M-Ox.	AA
R205	VRD-RA2BE680JY	J	68	1/8W	Carbon	AA
R206	VRD-RA2EE151JY	X	150	1/4W	Carbon	
R207	VRD-RA2BE223JY	J	22k	1/8W	Carbon	AA
R208	VRS-CY1JF332JY	J	3.3k	1/16W	M-Ox.	AA
R209	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
R210	VRS-CY1JF104JY	J	100k	1/16W	M-Ox.	AA
R211	VRS-CY1JF104JY	J	100k	1/16W	M-Ox.	AA
R212	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
R215	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
R220	VRS-CY1JF331JY	J	330	1/16W	M-Ox.	AA

PWB-A: DUNTKA358WEY5 (MINI NECK)
PWB-A: DUNTKA358WEY6 (NORMAL NECK)
MAIN UNIT (Continued)

Ref. No.	Part No.	★	Description			Code
R301	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R302	VRS-CY1JF152JY	J	1.5k	1/16W	M-Ox.	AA
R353	VRD-RA2BE683JY	X	68k	1/8W	Carbon	
R354	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R355	VRD-RA2BE223JY	J	22k	1/8W	Carbon	AA
R357	VRS-CY1JF822JY	J	8.2k	1/16W	M-Ox.	AA
R401	VRS-CY1JF101JY	J	100	1/16W	M-Ox.	AA
R402	VRS-CY1JF101JY	J	100	1/16W	M-Ox.	AA
R403	VRS-CY1JF101JY	J	100	1/16W	M-Ox.	AA
R404	VRD-RA2BE102JY	J	1.0k	1/8W	Carbon	AA
R411	VRS-CY1JF684JY	J	680k	1/16W	M-Ox.	AA
R412	VRS-CY1JF391JY	J	390	1/16W	M-Ox.	AA
R413	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R414	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
R421	VRS-CY1JF223JY	J	22k	1/16W	M-Ox.	AA
⚠ R451	VRS-SV2HC103J	J	10k	1/2W	M-Ox.	AA
R453	VRD-RA2BE152JY	J	1.5k	1/8W	Carbon	AA
R454	VRD-RA2EE334JY	J	330k	1/4W	Carbon	AA
R455	VRD-RA2BE392JY	J	3.9k	1/8W	Carbon	AA
R456	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R457	VRD-RA2BE102JY	J	1.0k	1/8W	Carbon	AA
R458	VRD-RA2EE334JY	J	330k	1/4W	Carbon	AA
R460	VRD-RA2BE152JY	J	1.5k	1/8W	Carbon	AA
R461	VRS-CY1JF184JY	J	180k	1/16W	M-Ox.	AA
R462	VRS-CY1JF273JY	J	27k	1/16W	M-Ox.	AA
R495	VRS-VV3DB820J	J	82	2W	M-Ox.	AA
R512	VRD-RM2HD102JY	J	1.0k	1/2W	Carbon	AA
R513	VRD-RM2HD102JY	J	1.0k	1/2W	Carbon	AA
R514	VRD-RM2HD1R0JY	J	1.0	1/2W	Carbon	AA
R515	VRS-VV3AB391J	J	390	1W	M-Ox.	AA
R516	VRS-CY1JF153JY	J	15k	1/16W	M-Ox.	AA
R517	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R518	VRS-CY1JF333JY	J	33k	1/16W	M-Ox.	AA
R519	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R520	VRD-RM2HD1R5JY	J	1.5	1/2W	Carbon	AA
			(MINI NECK)			
R520	VRD-RM2HD1R2JY	J	1.2	1/2W	Carbon	AA
			(NORMAL NECK)			
R522	VRD-RA2BE102JY	J	1.0k	1/8W	Carbon	AA
R523	VRD-RA2BE562JY	J	5.6k	1/8W	Carbon	AA
R525	VRD-RA2BE272JY	J	2.7k	1/8W	Carbon	AA
R527	VRD-RA2BE223JY	J	22k	1/8W	Carbon	AA
			(MINI NECK)			
R528	VRD-RA2BE272JY	J	2.7k	1/8W	Carbon	AA
R529	VRD-RA2BE472JY	J	4.7k	1/8W	Carbon	AA
⚠ R604	VRS-VV3DB682J	J	6.8k	2W	M-Ox.	AA
R605	VRD-RA2BE121JY	X	120	1/8W	Carbon	
R606	VRD-RA2BE102JY	J	1.0k	1/8W	Carbon	AA
⚠ R607	VRS-VV3DB682J	J	6.8k	2W	M-Ox.	AA
⚠ R608	VRS-VV3DB391J	J	390	2W	M-Ox.	AA
⚠ R609	VRS-VV3AB562J	J	5.6k	1W	M-Ox.	AA
R610	VRD-RM2HD220JY	J	22	1/2W	Carbon	AA
⚠ R611	VRS-KA3HG3R3K	J	3.3	5W	M-Ox.	AD
R622	VRS-CY1JF222JY	J	2.2k	1/16W	M-Ox.	AA
R623	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R624	VRN-RA2BK472FY	J	4.7k	1/8W	M-Film	AA
R634	VRD-RM2HD121JY	J	120	1/2W	Carbon	AA
R635	VRS-CY1JF332JY	J	3.3k	1/16W	M-Ox.	AA
R636	VRD-RA2EE221JY	J	220	1/4W	Carbon	AA
⚠ R641	VRS-VV3AB682J	J	6.8k	1W	M-Ox.	AA
▲⚠ R651	VRD-RM2HD270JY	J	27	1/2W	Carbon	AA
⚠ R653	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
▲⚠ R654	VRD-RA2BE154JY	X	150k	1/8W	Carbon	
⚠ R655	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
⚠ R659	VRN-VV3AB2R2J	J	2.2	1W	M-Film	AA
			(MINI NECK)			
R659	VRN-VV3ABR82J	J	0.82	1W	M-Film	AA
			(NORMAL NECK)			
⚠ R661	VRN-VV3ABR47J	J	0.47	1W	M-Film	AA
▲⚠ R662	VRD-RA2BE102GY	J	1.0k	1/8W	Carbon	AA
⚠ R702	RR-DZ0049CEZZY	J	3.9M	1/2W	Carbon	AB
	or					
	RR-HZ0048CEZZ					
	or					
	RR-UB2HG395K					
⚠ R703	VRW-KP3HC1R8K	J	1.8	5W	Cement	AC
R705	VRN-VV3ABR39J	J	0.39	1W	M-Film	AA
R706	VRN-VV3ABR39J	J	0.39	1W	M-Film	AA
R707	VRD-RM2HD270JY	J	27	1/2W	Carbon	AA
R708	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R710	VRS-SV2HC102J	J	1.0k	1/2W	M-Ox.	AA
R711	VRS-CY1JF334JY	J	330k	1/16W	M-Ox.	AA
R712	VRD-RA2BE100JY	J	10	1/8W	Carbon	AA
R713	VRS-SV2HC122J	J	1.2k	1/2W	M-Ox.	AA
R715	VRD-RA2BE150JY	J	15	1/8W	Carbon	AA
R716	VRS-VV3AB121J	J	120	1W	M-Ox.	AA
⚠ R721	VRD-RM2HD124JY	J	120k	1/2W	Carbon	AA
R722	VRS-CY1JF225JY	X	2.2M	1/16W	M-Ox.	
R723	VRS-CY1JF000JY	J	00	1/16W	M-Ox.	AA
R725	VRS-SV2HC821J	J	820	1/2W	M-Ox.	AA
R733	VRD-RA2EE394JY	J	390k	1/4W	Carbon	AA
R736	VRD-RM2HD184JY	J	180k	1/2W	Carbon	AA
R739	VRD-RM2HD332JY	J	3.3k	1/2W	Carbon	AA
R740	VRD-RM2HD470JY	J	47	1/2W	Carbon	AA
R741	VRN-RA2BK682FY	X	6.8k	1/8W	M-Film	
R742	VRD-RM2HD561JY	J	560	1/2W	Carbon	AA
R743	VRD-RM2HD681JY	J	680	1/2W	Carbon	AB
R751	VRD-RA2BE821JY	J	820	1/8W	Carbon	AA
R752	VRD-RA2BE562JY	J	5.6k	1/8W	Carbon	AA
R755	VRD-RM2HD151JY	J	150	1/2W	Carbon	AA
⚠ R758	VRS-SV2HC100J	J	10	1/2W	M-Ox.	AA
⚠ R773	VRS-VV3LB270J	J	27	3.0W	M-Ox.	AB
⚠ R774	VRS-VV3LB680J	J	68	3.0W	M-Ox.	AB
R801	VRD-RM2HD470JY	J	47	1/2W	Carbon	AA
R807	VRS-CY1JF272JY	J	2.7k	1/16W	M-Ox.	AA
R808	VRS-CY1JF222JY	J	2.2k	1/16W	M-Ox.	AA
R809	VRS-CY1JF223JY	J	22k	1/16W	M-Ox.	AA
R810	VRS-CY1JF223JY	J	22k	1/16W	M-Ox.	AA
R901	VRD-RA2BE101JY	X	100	1/8W	Carbon	
R902	VRS-CY1JF750JY	J	75	1/16W	M-Ox.	AA
R906	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R925	VRS-CY1JF104JY	J	100k	1/16W	M-Ox.	AA
R961	VRS-CY1JF101JY	J	100	1/16W	M-Ox.	AA
R962	VRS-CY1JF101JY	J	100	1/16W	M-Ox.	AA
R2001	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R2002	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R2006	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R2008	VRS-CY1JF472JY	J	4.7k	1/16W	M-Ox.	AA
R2009	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R2010	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R2012	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R2016	VRS-CY1JF223JY	J	22k	1/16W	M-Ox.	AA
R2018	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R2020	VRS-CY1JF223JY	J	22k	1/16W	M-Ox.	AA
R2022	VRS-CY1JF333JY	J	33k	1/16W	M-Ox.	AA
R2023	VRD-RA2BE223JY	J	22k	1/8W	Carbon	AA
R2024	VRD-RA2BE682JY	X	6.8k	1/8W	Carbon	
R2025	VRD-RA2BE682JY	X	6.8k	1/8W	Carbon	
R2026	VRD-RA2BE682JY	X	6.8k	1/8W	Carbon	
R2027	VRD-RA2BE682JY	X	6.8k	1/8W	Carbon	
R2028	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R2029	VRS-CY1JF103JY	J	10k	1/16W	M-Ox.	AA
R2032	VRD-RA2BE471JY	X	470	1/8W	Carbon	
R2033	VRS-CY1JF684JY	J	680k	1/16W	M-Ox.	AA
R2034	VRS-CY1JF684JY	J	680k	1/16W	M-Ox.	AA
R2040	VRS-CY1JF102JY	J	1.0k	1/16W	M-Ox.	AA
R2041	VRS-CY1JF333JY	J	33k	1/16W	M-Ox.	AA
R2042	VRD-RA2BE101JY	X	100	1/8W	Carbon	
R2043	VRD-RA2BE101JY	X	100	1/8W	Carbon	
R2044	VRS-CY1JF683JY	J	68k	1/16W	M-Ox.	AA
R2045	VRS-CY1JF101JY	J	100	1/16W	M-Ox.	AA
R2047	VRS-CY1JF221JY	J	220	1/16W	M-Ox.	AA
R2048	VRS-CY1JF562JY	J	5.6k	1/16W	M-Ox.	AA
R2049	VRS-CY1JF333JY	J	33k	1/16W	M-Ox.	AA
R2060	VRS-CY1JF221JY	J	220	1/16W	M-Ox.	AA
R2061	VRS-CY1JF562JY	J	5.6k	1/16W	M-Ox.	AA

Ref. No.	Part No.	★	Description	Code
PWB-A: DUNTKA358WEY5 (MINI NECK) PWB-A: DUNTKA358WEY6 (NORMAL NECK) MAIN UNIT (Continued)				
R2062	VRS-CY1JF183JY	J	18k 1/16W M-Ox.	AA
R2063	VRS-CY1JF222JY	J	2.2k 1/16W M-Ox.	AA
R2065	VRS-CY1JF000JY	J	00 1/16W M-Ox.	AA
R2066	VRS-CY1JF103JY	J	10k 1/16W M-Ox.	AA
R2067	VRS-CY1JF103JY	J	10k 1/16W M-Ox.	AA
R2068	VRS-CY1JF103JY	J	10k 1/16W M-Ox.	AA
R2070	VRS-CY1JF103JY	J	10k 1/16W M-Ox.	AA
R2072	VRS-CY1JF103JY	J	10k 1/16W M-Ox.	AA
R2101	VRS-CY1JF101JY	J	100 1/16W M-Ox.	AA
R2102	VRS-CY1JF101JY	J	100 1/16W M-Ox.	AA
R2201	VRD-RA2BE103JY	J	10k 1/8W Carbon	AA
R2202	VRD-RA2BE473JY	J	47k 1/8W Carbon	AA
R2203	VRS-CY1JF332JY	J	3.3k 1/16W M-Ox.	AA
R2211	VRD-RA2BE222JY	J	2.2k 1/8W Carbon	AA
R2212	VRS-CY1JF682JY	J	6.8k 1/16W M-Ox.	AA
R2213	VRD-RA2BE223JY	J	22k 1/8W Carbon	AA
R2401	VRS-CY1JF101JY	J	100 1/16W M-Ox.	AA
R2402	VRS-CY1JF101JY	J	100 1/16W M-Ox.	AA
R2403	VRS-CY1JF101JY	J	100 1/16W M-Ox.	AA
R2404	VRS-CY1JF101JY	J	100 1/16W M-Ox.	AA
R2501	VRS-CY1JF123JY	J	12k 1/16W M-Ox.	AA
R2503	VRS-CY1JF273JY	J	27k 1/16W M-Ox.	AA
R2504	VRS-CY1JF123JY	J	12k 1/16W M-Ox.	AA
R2505	VRS-CY1JF563JY	J	56k 1/16W M-Ox.	AA
R2506	VRS-CY1JF563JY	J	56k 1/16W M-Ox.	AA
R2507	VRS-CY1JF823JY	J	82k 1/16W M-Ox.	AA
R2508	VRS-CY1JF153JY	J	15k 1/16W M-Ox.	AA
R2509	VRS-CY1JF272JY	J	2.7k 1/16W M-Ox.	AA
R2601	VRD-RA2BE100JY	J	10 1/8W Carbon	AA
R2603	VRS-CY1JF000JY	J	00 1/16W M-Ox.	AA
R2605	VRS-CY1JF000JY	J	00 1/16W M-Ox.	AA
R2607	VRS-CY1JF000JY	J	00 1/16W M-Ox.	AA
SWITCHES				
S2501	QSW-K0003AJZZ+ or QSW-K0079GEZZ	J	Power	AB
S2502	QSW-K0003AJZZ+ or QSW-K0079GEZZ	J	VOL-Down	AB
S2503	QSW-K0003AJZZ+ or QSW-K0079GEZZ	J	VOL-Up	AB
S2504	QSW-K0003AJZZ+ or QSW-K0079GEZZ	J	CH-Down	AB
S2505	QSW-K0003AJZZ+ or QSW-K0079GEZZ	J	CH-Up	AB
MISCELLANEOUS PARTS				
⚠ RY701	RRLYJ0081CEZZ	J	Relay	AL
⚠ F701	QFS-B4023CEZZ or QFS-B4021GEZZ	J	Fuse, 4A/125V	AC
FB351	RBLN-0091GEZZY	J	Ferrite Bead	AB
FB601	RBLN-0047CEZZY	J	Ferrite Bead	AB
FB2002	RBLN-0091GEZZY	J	Ferrite Bead	AB
FH701	QFSHD1013CEZZ+	J	Fuse Holder	AC
FH702	QFSHD1014CEZZ+	J	Fuse Holder	AC
J903	QJAKE0211CE09 or QJAKE0159CEZZ	J	Jack, Audio-In	AD
J905	QJAKE0211CE04 or QJAKE0158CEZZ	J	Jack, Video-In	AD
P302	QPLGN0261CEZZ	J	Plug, 2-pin(S)	AB
P401	QPLGN0561CEZZ	J	Plug, 5-pin(GBM)	AB
P601	QPLGN0660CEZZ	J	Plug, 6-pin(K)	AC
P651	QPLGN0361CEZZ	J	Plug, 3-pin(TP651-3)	AB
P701	QPLGN0260CEZZ	J	Plug, 2-pin(M)	AC
P751	QPLGN0461CEZZ	J	Plug, 4-pin(YBN)	AB
P2001	QPLGN0561CEZZ	J	Plug, 5-pin(TP2001-5)	AB
RMC2601	RRMCU0222CEZZ	J	R/C Receiver	AL
JA409	RBLN-0047CEZZY	J	Balun	AB
RDA501	PRDAR0297PEFW	R	Heat Sink, for IC501	AD
RDA602	PRDAR0216PEFW	R	Heat Sink, for Q602	AE
RDA701	PRDAR0026PEFW	R	Heat Sink, for Q701	AD
	LX-BZ3100CEFD	J	Screw	AA
	LX-BZ3100CEFD	J	Screw	AA
	LX-BZ3100CEFD	J	Screw	AA

Ref. No.	Part No.	★	Description	Code

PWB-B: DUNTKA359WEW4 (MINI NECK)
PWB-B: DUNTKA359WEW5 (NORMAL NECK)
CRT UNIT

TRANSISTORS

Q852	RH-TX0110BMZZ+ or VS2SC22290/1E	J	TX0110BM	AC
Q854	RH-TX0110BMZZ+ or VS2SC22290/1E	J	TX0110BM	AC
Q856	RH-TX0110BMZZ+ or VS2SC22290/1E	J	TX0110BM	AC
Q881	VS2PA1015Y+-1+ or VS2SA1015-Y-1	J	2PA1015Y	AC

DIODES

D882	RH-DX0048GEZZY	X	Diode	
D885	RH-DX0475CEZZY	X	Diode	

COIL

L852	VP-MK820K0000+	J	Peaking 82µH	AB

CAPACITORS

[EL.···Electrolytic]

C851	VCCCCY1HH151JY	J	150p	50V	Ceramic	AA
C852	VCCCCY1HH151JY	J	150p	50V	Ceramic	AA
C853	VCCSPA1HL151J+	J	150p	50V	Ceramic	AA
C854	RC-KZ0029CEZZ+ or RC-KZ0160GEZZ	X	0.01	1.4kV	Ceramic	
C883	VCEA0A1CW336M+	J	33	16V	EL.	AB

RESISTORS

[M-Ox.···Metal Oxide]

R851	VRS-CY1JF470JY	J	47 (NORMAL NECK)	1/16W	M-Ox.	AA
R852	VRD-RA2BE181JY	J	180	1/8W	Carbon	AA
R853	VRS-CY1JF121JY	J	120	1/16W	M-Ox.	AA
⚠ R857	VRS-VV3AB123J	J	12k	1W	M-Ox.	AA
R858	VRD-RM2HD332JY	J	3.3k	1/2W	Carbon	AA
R859	VRS-CY1JF470JY	J	47 (NORMAL NECK)	1/16W	M-Ox.	AA
R860	VRD-RA2BE181JY	J	180	1/8W	Carbon	AA
R861	VRS-CY1JF121JY	J	120	1/16W	M-Ox.	AA
⚠ R865	VRS-VV3AB123J	J	12k	1W	M-Ox.	AA
R866	VRD-RM2HD332JY	J	3.3k	1/2W	Carbon	AA
R867	VRS-CY1JF470JY	J	47	1/16W	M-Ox.	AA
R868	VRS-CY1JF181JY	J	180	1/16W	M-Ox.	AA
R869	VRS-CY1JF121JY	J	120	1/16W	M-Ox.	AA
⚠ R873	VRS-VV3AB123J	J	12k	1W	M-Ox.	AA
R874	VRD-RM2HD332JY	J	3.3k	1/2W	Carbon	AA
R881	VRS-CY1JF561JY	J	560	1/16W	M-Ox.	AA
R882	VRS-CY1JF391JY	J	390	1/16W	M-Ox.	AA
R883	VRD-RA2BE561JY	X	560	1/8W	Carbon	
R884	VRS-CY1JF152JY	J	1.5k	1/16W	M-Ox.	AA
R886	VRS-CY1JF821JY	J	820	1/16W	M-Ox.	AA
R887	VRD-RA2BE470JY	J	47	1/8W	Carbon	AA
R890	VRS-CY1JF470JY	J	47 (MINI NECK)	1/16W	M-Ox.	AA
R891	VRS-CY1JF470JY	J	47 (MINI NECK)	1/16W	M-Ox.	AA

MISCELLANEOUS PARTS

P851	QPLGN0561CEZZ	J	Plug, 5-pin(GBN)	AB
P852	QPLGN0461CEZZ	J	Plug, 4-pin(YBN)	AB
SC851	QSOCV0016PEZZ or QSOCV0933CEZZ	R	Socket, 11-pin (NORMAL NECK)	AF
SC852	QSOCV0841CEZZ or QSOCV0840CEZZ	J	Socket, 9-pin (MINI NECK)	AG

MISCELLANEOUS PARTS

⚠ ACC701	QACCD3064CESA or QACCD3060CESA or QACCD3090CESA	J	AC Cord(AC120V/60Hz)	AM
SP1	VSP0080PBQ9YA or VSP0080PBP7YA or VSP0080PBP8YA	J	Speaker, 32 ohm	AH
	QCNW-0167MEZZ	J	Connecting Cord	AE
	QCNW-2046PEZZ	R	Connecting Cord	AF
	QCNW-2160PEZZ	R	Connecting Cord	AG
	LHLDK0014PEZZ	R	AC Cord Holder	AD
	LHLDZ0063PEZZ	R	Anode Clamp Holder	AD
	TLABM1829PEZZ	R	Model Label	AB
	TLABN0001PEZZ	R	Serial No. Label	AD
	LX-TZA003WJFD	J	CRT Screw, x4	AF
	LX-WZ0003PEFD	R	CRT Washer, x4	AB
	XTASD40P20000	J	Screw, x4	AA
	LX-TZ0019PEFD	R	Screw, x4	
	TCAUS0010PEZZ	R	Caution Card	AB

SUPPLIED ACCESORRIES

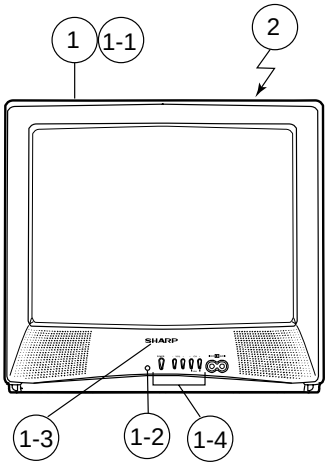
	RRMCG1324CESA	J	Infrared R/C Unit	AT
	TiNS-A205WJZZ	X	Operation Manual	
	TGAN-0018PEZZ	R	Guarantee Card	AD

PACKING PARTS
(NOT REPLACEMENT ITEM)

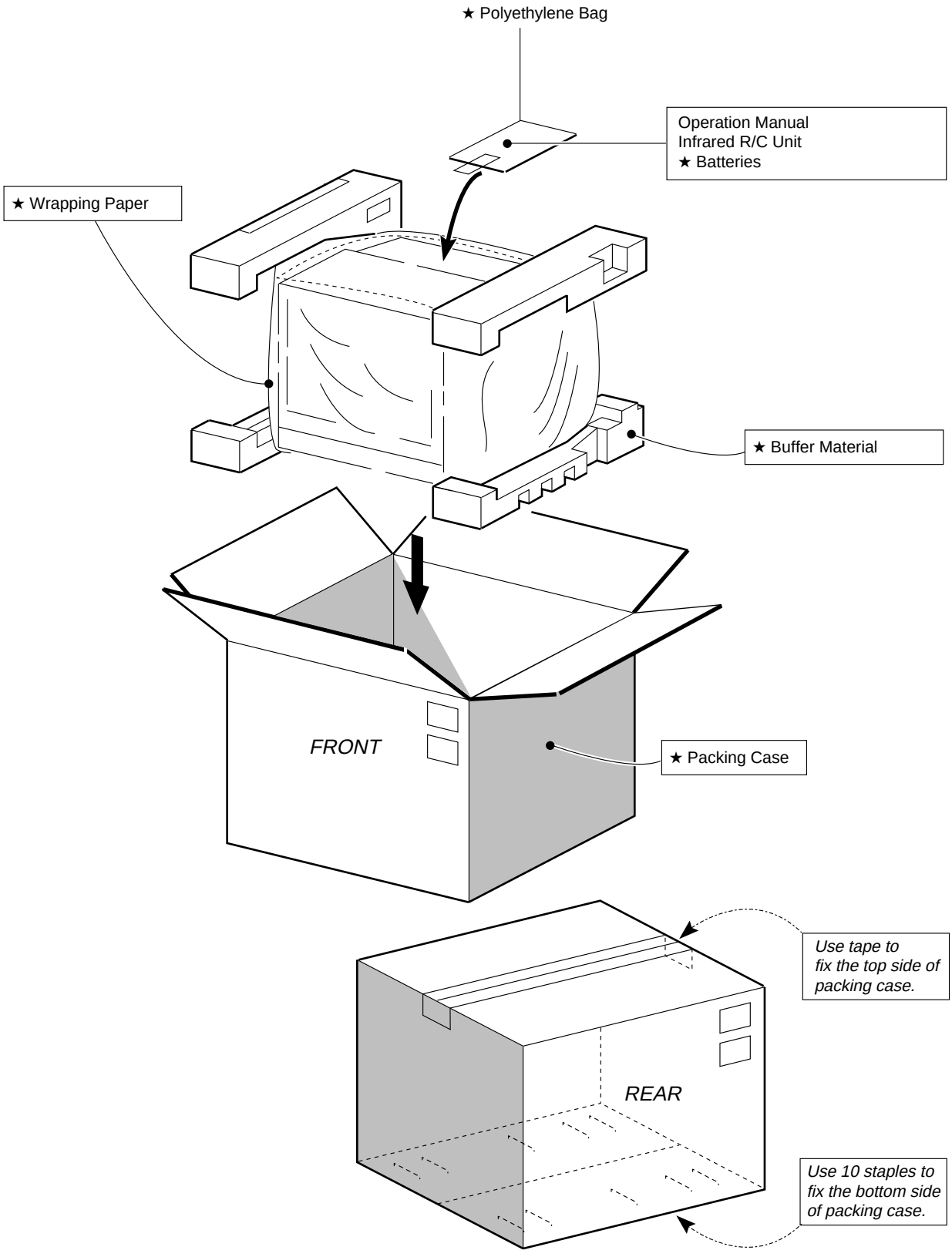
	SPAKCA150WJZZ	–	Packing Case	—
	SPAKP0098PEZZ	R	Wrapping Paper	AG
	SPAKXA076WJZZ	–	Buffer Material	—
	SSAKA0001PEZZ	R	Polyethylene Bag	AA

CABINET PARTS

1	CCABAA075WEV0	X	Cabinet	
1-1	*Not Available*	–	Front Cabinet	—
1-2	GCOVAA107WJSA	X	Cover for R/C	
1-3	HBDGB0019PESB	R	Badge, "SHARP"	AD
1-4	JBTN-A042WJKA	X	Button(Power, Vol-up/down, CH-up/down)	
2	GCABBA042WJKA	X	Rear Cabinet	



PACKING OF THE SET



★ MARK : Not replacement items.

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